ANESTHESIA SUPPLEMENT — FOLLOWING PAGE 32

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VOL. XXX. JANUARY, 1916. No. 1

SOME CLINICAL ASPECTS OF SINUS THROMBOSIS WITH SPECIAL REFERENCE TO THE PATHOLOGY.*

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Sinus thrombosis presents a variable clinical picture. The occurrence of chilly sensations or a distinct chill, a temperature curve showing a rapid rise and fall, a blood stream containing living streptococci, these findings give a familiar symptom-complex. Deviation from the so-called classical clinical picture, and variations of it studied in regard to the existing pathologic lesions afford interesting data of which comprehension is not so common. With a view to accentuate and familiarize the varying types, the following twenty cases are presented:†

Analyzing the case histories presented above a few words are necessary on the pathologic conditions that were uncovered.

The mastoid lesions found were: (a) of the coalescent type; (b) of the hemorrhagic type; (c) of chronic mastoiditis; (d) entire absence of mastoid cells.

By the *coalescent type* of mastoid lesion is meant that form of mastoid involvement in which the inter-cellular walls become broken down and coalesce. The mastoid process becomes more or less filled up with detritus and the sinus is reached by the lesion through contact. Technically a perisinus abscess is very often present, and the sinus wall is either necrotic, or discolored, or covered with granulations. Of the group of cases here reported five presented this type of mastoid lesion, and four of these gave a diseased appearance of the sinus wall.

The thrombus is formed in this group of cases as a defence placed by nature to protect the blood stream against the invasion. The thrombus forms and is at first sterile, and only secondarily becomes infected.

Secondary lesions are uncommon in this group, and recovery of the patient is the usual outcome, when surgical interference is promptly instituted.

The thrombus was demonstrable in four cases, and not found in one of this group. Of this group four recovered, and one died. The fatal case presented in addition to the sinus involvement a general purulent meningitis.

Plate I. Coalescent Mastoiditis.
The loss of nuclei in the bone is seen. The general destruction of cell walls are noted. Detritus and pus fill the spaces taken up by the cells. (Author's specimen).

By the *hemorrhagic type* of mastoid lesion is meant a mastoid involvement whose most characteristic lesion is usually presented in true influenza infections of the mastoid process. In this type of lesion, the bony walls separating the mastoid cells from one another are not broken down. Their lining mucosa is thickened and infiltrated with hemorrhagic infections. One sees on microscopic sections taken from this type of lesion the intact bony walls, the very swollen appearance of the mucosa, and the great engorgement of the blood-vessels with their interior filled with blood cells. This bloodvessel engorgement gives the type its characteristic name, and is the distinguishing lesion. The infection is situated in the mucosa and in the bloodvessels. Clinically such cases are very septic,

* Presented at the Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, Chicago, September, 1915.

† For the purposes of this paper, the detailed case histories are unnecessary. In the presentation before the Academy, a lantern slide demonstration of the pathologic lesions and temperature charts was given in more detail than is possible here.

and the septic material reaches the larger vessels and eventually infects the sinus.

The thrombus which forms in the lumen of the sinus grows *without* making any abnormalities apparent on the sinus wall. The thrombus is infected primarily. We must still look upon the formation of the thrombus as Nature's effort to stop the entrance into the circulation of septic material, but because the particles of infected matter are in the blood stream from the start, before the thrombus can form, therefore, secondary lesions are common with this type of case. In fact, they often develop simultaneously with the growth of the clot in the sinus. With the newer means of making early diagnosis—blood culture—it very often happens that no appreciable clot is demonstrable, yet the opening of the sinus, and the resection of the internal jugular stops the septic course of the disease and recovery ensues. Thrombi were found in two cases, and were not demonstrable in three.

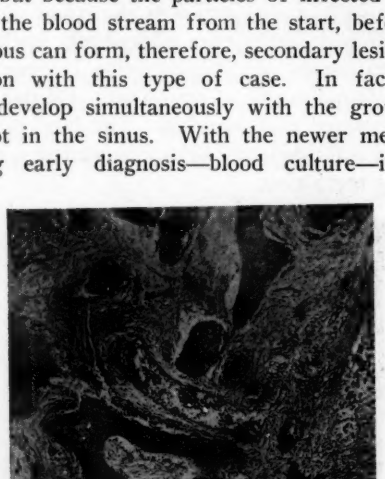

Plate II. Hemorrhagic Mastoiditis.
The bony cell walls are intact, and normal. The marked swelling of the mucosa, the large numbers of blood vessels, and the enlargement of these vessels are characteristic of this type of lesion. (Author's specimen.)

That the jugular vein may be the seat of inflammatory lesions in cases where no thrombus is demonstrable is shown by examination of the walls of such veins. Fig. 3 is from such a case. (Case 17 of the chart.)

The hemorrhagic type of mastoiditis was found five times among our cases. The appearance of the sinus wall was normal in all five of these. The blood culture was positive in two, was not taken in one, and negative in two.

Secondary lesions were found in four of them. In one the secondary lesion was a cavernous sinus thrombosis. The joints and muscles were the seat of abscess formations in two, and the endocardium was involved in one. Of this type of lesion there were four recoveries, and one death.

The sinus showed a thrombus in five cases whose mastoid process was the seat of a *chronic mastoiditis.* By chronic mastoiditis is meant cases which present a chronic otorrhea for a number of years, or whose mastoidal lesion demonstrates a lesion as the result of the presence of cholesteatomata; those due to caries and necrosis, or those in which a chronic suppuration of the tympanic mucosa presents an acute exacerbation.

In most of such cases the sinus is reached through contact, or through purulent tracts extending to the sinus through a more or less sclerosed bony mastoid process.

Very often the onset of the invasion of the blood-vessel marks the commencement of the acute illness. This type of mastoid lesion was found five times. The blood culture was positive four times, and in the other case was not taken. The sinus wall was normal in appearance in two cases; it was pathological in three. A thrombus was demonstrable in four of the cases, and no clot was found in one of them. This case, however, gave free pus from the bulb and no bleeding from the jugular dome. The thrombus seemed to have undergone degeneration.

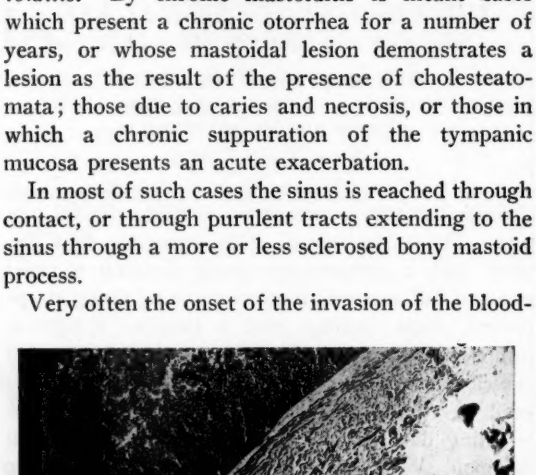

Plate III. Jugular Wall.
Very much thickened and indurated. From a case with no thrombus in the sinus. (Author's specimen.)

Secondary lesions among this group of cases were common. Pneumonia was presented three times, and one case presented a brain abscess. The absence of a secondary lesion was noted once.

Because of the frequency of the secondary lesions,

TWENTY CASES WITH CLINICAL AND BLOOD PICTURE OF SEPTIC INVASION OF THE BLOOD STREAM.

No.	Identification.	Age.	Duration.	Type of Mastoid Disease.	Anatomical Anomalies.	Blood Report.	Clinical Picture.	Appearance of Sinus Wall.	Interminate or Secondary Lesions.	Thrombus	Result.
1.	Chas. Wil.	45 yrs.	5 mos.	Coalescent	Sinus far forward bisecting mastoid process.	None taken	Not septic	Granulation on sinus.	None	Clot found	Recovery
2.	B. S.	6 yrs.	3 dys.	None present	Absence of all cells in mastoid process.	None taken	Not septic	Normal	None	Clot found at autopsy.	Death
3.	D. D.	14 mos.	10 dys.	Coalescent	Nothing unusual.	Positive	Septic curve	Normal	None	Clot found	Recovery
4.	Sch.	25 yrs.	Unknown	Chron. Mastoiditis	Nothing unusual.	None taken	Septic curve	Normal	None	Clot found	Recovery
5.	McD.	32 yrs.	3 wks.	Coalescent	Nothing unusual.	Positive	Septic curve.	Discolored and granulations.	None	Clot found	Recovery
6.	Mrs. Rap.	?	1 wk.	Hemorrhagic	Nothing unusual.	Negative	Septic curve	Normal	None	Clot found	Recovery
7.	M. C.	27 yrs.	2 wks.	Acute exacerbation of Chronic Mastoiditis	Nothing unusual.	Positive	Temperature high, but not typically septic	Sequestra involving sinus wall; granulations, discolorations.	Lobar pneumonia of upper lung (left).	Clot found	Recovery
8.	A. D.	6 yrs.	2 wks.	Hemorrhagic	Nothing unusual.	Not taken	Septic curve	Normal	Left knee joint inflamed; abscess between shoulder blades; endocarditis	Clot found	Recovery
9.	H. W.	24 yrs.	1 wk.	Not stated in record	Very narrow, deep mastoid; sinus very far forward.	Positive	Septic curve	Normal	Right knee joint diseased.	Not found	Recovery
10.	Mrs. R.	45 yrs.	3 wks.	Not stated in record	Nothing unusual.	First negative Later positive	Septic curve	Normal	Left lober pneumonia; abscess in right axilla; left knee joint abscess.	Clot found	Death
11.	A. W.	27 yrs.	5 dys.	Chronic Mastoiditis	Entire mastoid sclerosed.	Positive	Septic curve	Perisinus abscess; pus in bulb.	Pneumonia; meningism from sepsis.	No clot found	Death
12.	Rose F.	12 yrs.	Unknown	None: Case operated upon for persistent post-auricular fistula.		Negative	Septic curve	Normal	Septic meningitis.	Clot found	Death
13.	J. F.	46 yrs.	1 wk.	Chronic Mastoiditis; acute labyrinthitis	Sclerosed mastoid.	Positive	Septic curve	Normal	Septic meningitis; pneumonia.	Clot found	Death
14.	Baby C.	2½ yrs.	1 wk.	Hemorrhagic	Nothing uusual.	Not taken	Septic curve	Normal	Endocarditis.	Clot not found	Recovery
15.	Baby S.	2 yrs.	10 dys.	Coalescent	Very pneumatic mastoid.	Not taken	Septic curve	Normal	No lesion found, but daily convulsions and high fever until sinus was opened and ends plugged off.	Clot not found	Recovery
16.	Sid. M.	3 yrs.	4 wks.	Hemorrhagic	Abnormally thick cortex.	Early negative Late positive	Septic curve	Normal	Cavernous sinus thrombosis.	Clot not found	Death
17.	Mrs. O'C.	25 yrs.	1 wk.	Hemorrhagic	Nothing unusual.	Positive	Septic curve	Normal	Abscess left hand, inflamed right knee joint, abscess on back over crest of ilium.	Clot not found	Recovery
18.	Louis Mich	9 yrs.	3 wks.	Chronic Mastoiditis	Nothing unusual.	Positive	Septic curve	Perisinus abscess; granulations on wall.	Abscess, temporo-sphenoidal lobe.	Clot found	Death
19.	Fern.	50 yrs.	Unknown	Coalescent	Nothing unusual.	Negative	Septic curve	Granulations; necrotic sinus wall.	Lepto-meningitis.	Clot found	Death
20.	Morris Less	47 yrs.	21 dys.	None present	Abscess of all mastoid cells in process.	Positive	Septic curve	Normal	None.	Clot found	Recovery

the percentage of recoveries in this group is small. There were three deaths and two recoveries in this group.

Among the cases whose histories constitute the basis of this report are two of a type which the writer first described in a preliminary report published in *The Laryngoscope,* March, 1915. These cases are characterized by an anatomical anomaly. The mastoid process presents externally a normal topography as to its cortex. There is, however, an *entire absence of mastoid cells* in its interior. I

Plate IV. Chronic Mastoiditis.
The bony partitions are thickened and hardened. The mucosa is swollen. Detritus is found in the air cells. (Author's specimen.)

presented the first case of this type before the Otological Section of the N. Y. Academy of Medicine on October 9, 1908. Since then I have collected six specimens of temporal bones of this type and one other case reported in *The Laryngoscope,* March, 1915.

The middle ear in these cases is first involved, and from the mastoid antrum, which is the only cell present, the disease spreads either by contiguity or through the network of venous channels, directly to the sinus and infects it. Clinically, this group of cases is usually not placed under otological supervision. The absence of pain referable to the ear, the sudden onset of septic symptoms give rise to such errors of diagnosis that the cases remain under the supervision of medical men, and the fatal termination often precedes a recognition of the condition.

Of this group I present two cases in this study. In the first the autopsy revealed the condition. The other case was happily diagnosticated in time for surgical intervention to save life. In the latter case, the positive blood culture preceded the demonstration of the thrombus.*

The character of the mastoid lesion is not noted in the records of three of the cases. Of these one had a normally appearing sinus wall, but a positive blood culture, and the clot was demonstrable. The second gave a positive blood culture late, earlier cultures being negative. In this case a clot was found. In both these cases secondary lesions were present. In the first a lobar pneumonia, and abscesses of the knee joint and axilla, and in the second a knee-joint suppuration. The first case died, the second recovered.

The third case in this group was Case 12, Chart I.

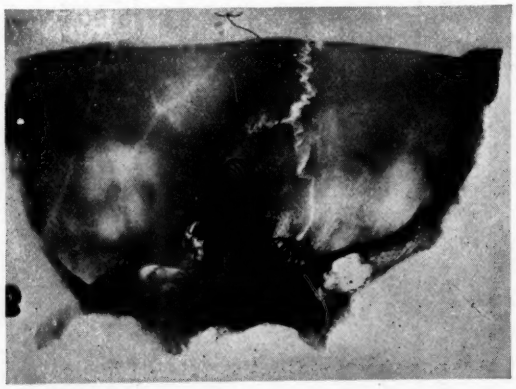

Plate V.
X-ray photograph of the temporal bone of adult male about 32 years of age. Absence of mastoid cells, close juxtaposition of venous channels to middle ear shown by wire placed in sigmoid sinus groove, in middle ear and antrum, and in dome of jugular bulb. Photographed from above.

Here operation had been performed on the mastoid some months previously, and there resulted a persistent post-auricular fistula. A plastic operation was performed to close this fistula, and after a week's time, septic symptoms came on. The blood was negative, and the sinus wall normal in appearance, but a thrombus was found. The patient died of septic meningitis.

Summarizing our observations, we have the following:

Number of cases studied	20	
Hemorrhagic type of mastoiditis in	5	cases
Coalescent type of mastoiditis in	5	"
Chronic mastoiditis in	5	"
Absence of mastoid cells in	2	"
Mastoid lesion not recorded in	3	"
Secondary lesions were present in	12	"
Sinus walls were normal in	14	"
Sinus wall was pathologic in	6	"
Thrombus demonstrable in	15	"
No clot in sinus in	3	"
Sinus not opened in	2	"
Blood culture positive in	11	"
Blood culture negative in	3	"
Blood culture not taken in	6	"
Death with thrombosis only in	1	"
Death with secondary lesions in	7	"
Total deaths	8	"
Recoveries with thrombosis in	7	"
Recoveries with secondary lesion in	5	"
Total recoveries	12	"

* For details of this case see **The Laryngoscope**, March, 1915.

A brief note on the surgery instituted: Excepting Case 2, (Chart), where the condition was found only at autopsy, surgical procedures consisted in opening the sinus, removing the thrombus, and resecting the internal jugular vein.

In cases 14 and 15, surgical interference was limited to opening the sinus. No procedures were instituted upon the jugular. This often suffices in children.

In Case 9, surgery was limited to opening the sinus. The bulbar end was found free from clot, and a plug shut off the circulation from further invasion. All these cases recovered.

In one, Case 13, it was impossible to find the internal jugular vein.

From these observations we may draw the following conclusions:

1. The type of mastoid lesion is an important factor in determining the gravity of a given case of sinus thrombosis.

2. The hemorrhagic type of mastoiditis presents secondary complications more frequently than do the other types of mastoiditis.

3. The normal appearance of a sinus wall is no indication as to the presence or absence of a thrombosis of the sinus.

4. Since infection of the bloodvessel wall may proceed in either direction, i. e., either with or against the direction of the blood current, the resection of the internal jugular is recommended in spite of a normally appearing sinus wall, and the failure to demonstrate a clot within it, where septic temperature continues, and a positive blood culture is found.

5. In the absence of a positive blood culture, with pyemic symptoms, and conditions presented as in paragraph 3, with advent of abscess formations in muscles, or joints, or endocarditis, a resection of the internal jugular is recommended.

6. Secondary lesions, excluding meningitis, while aggravating the gravity of the prognosis, do not necessarily mean a fatal prognosis. Of my 12 recoveries, five had secondary lesions.

616 Madison Avenue, New York.

HYPERTHYROIDISM AFTER OPERATION.

The following factors undoubtedly influence and materially aid in causing acute hyperthyroidism following operation, and from observation and deductive reasoning they are of greatest potency in the order named: (1) Trauma, (2) hemorrhage, (3) shock, (4) prolonged anesthesia, and (5) prolonged operation. No technic is adequate which does not minimize these five factors.—W. L. CROSTHWAIT in *Texas Medical Journal Red Book.*

THE TREATMENT OF DEFLECTED NASAL SEPTA.*

J. H. SIMPSON, M.D.,
LOUISVILLE, KY.

The etiology of septal deflection has provoked volumes of discussion. It is claimed by many observers that absolutely normal and straight nasal septa are rarely seen among the civilized people, whereas the converse is true in savage races. Thompson cites two reasons for the frequency of septal deviations in Caucasians: (a) increased cranial development with enlargement of the facial angle, and (b) admixture of the different races. Morgagni believes septal deviation is due to excessive upward growth of the vomer; Trendelenburg and Freeman emphasize the persistent high-arched palate as a cause; other authors consider faulty development of the facial bones as the essential etiologic factor; Talbot holds neuroses or the stigmata of degeneracy resulting in faulty development of the facial bones responsible for deflected septa. Certain authors state that the high arch is invariably due to rickets which in turn causes septal deflection the essential fact in the argument being that in almost 95 per cent. of such cases septal deviations are present. Other presumed predisposing causes are the various so-called diatheses, such as syphilis, tuberculosis, cretinism, etc. It is not difficult to understand that if development of excessive adenoid growth be permitted to progress undisturbed in an otherwise comparatively normal infant, there will subsequently be noted a high-arched palate, malocclusion of the teeth, and still later in life a deflection of the nasal septum. Excessive development of the middle or inferior turbinate may cause deviation by pushing the septum to the opposite side, and this will also apply to nasal tumors, polypi, and foreign bodies. Last, but not least, trauma is a prominent factor in the causation of deviation, especially in the cartilaginous septum, but it hardly seems possible that a blow upon the nose could fracture the perpendicular ethmoidal plate or vomer.

Septal deviations are frequently seen in children after the second dentition, and occur more often in males than in females, perhaps because of their greater exposure to injury. Obviously, when the septum is greatly deflected from its normal position, it becomes too long for the vertical nasal diameter. "The development of these structures is no doubt greatly influenced by the causes of nasal

* Read before the Society of Physicians and Surgeons, of Louisville, Kentucky, October 21, 1915.

obstruction, with its associated mouth-breathing; as adenoids in early childhood produce a high, narrow-arched palate, and an undersized, receding upper jaw, consequently the floor of the nose is diminished, and the septum is crowded out of its proper abode; so if the septum continues to develop, it must be distorted."

Deflections of the septum are classified according to their location and extent. When of traumatic origin the deflection is usually confined to the cartilaginous portion of the septum, and three varieties have been noted; (a) if situated far forward, it is ordinarily a dislocation of the columnar cartilage and may be readily seen behind the vestibule; (b) angular deviation extending antero-posteriorly, its importance depending upon whether or not it impinges upon the middle or inferior turbinate; (c) perpendicular deviation, which usually occurs at about the middle of the cartilage. The deflections that occur during the process of development also present several varieties, ranging from a bony ridge along the vomer to a marked bulging of the perpendicular ethmoidal plate, or a combination of the two.

Ballenger divides septal deformities into: (1) cartilaginous deviation, comprising the anterior portion, which is turned outward into the vestibule of the nose and obstructs respiration; angular deviation, which obstructs both the middle and inferior meatuses; and vertical deviation, which interferes with proper ventilation; (2) osseous deviation, comprising a bony ridge along the upper border of the crista nasalis and the vomer, which encroaches upon the inferior turbinate, causing local irritation and interfering with posterior drainage; deflection of the vertical plate of the ethmoid bone, impinging upon the middle turbinate and interfering with drainage and ventilation of the accessory sinuses on the convex side. Kyle divides deviations into two classes, i. e., those with and those without external deformity; he also mentions the "S" and "C" types, and those with formation of redundant tissue.

According to Thompson the deviation may assume the form of a diffuse or cup-like bulge, a tray, the swelling of a sail, or the inside of a saddle. "It is obvious, therefore, that while classification into groups is perhaps helpful for the purpose of study, it is useless and deceptive in practice, for there are so many irregularities and anatomical peculiarities that it would be diffcult, even impossible, to form a classification which would embrace all of them."

Among the subjective symptoms of deflected nasal septa may be mentioned a sense of fulness in the lower portion of the nose, if the deviation impinge upon the body of the inferior turbinate; or in the "bridge" of the nose or between the eyes, if the deviation be high. If the deflected septum has caused irritation of the ethmoid cells, pain may be noted at the inner angle of the orbit and over the lachrymal bones with or without pressure. If the deviation be very high the patient often complains of frontal headache, which is worse in the morning and gradually improves during the day, in contradistinction to headache of ocular origin. Vertigo is oftentimes associated with septal deviation, and, unlike that due to ocular disease, is increased by leaning or jarring of the body.

The nasal secretion undergoes certain changes. The mucus becomes heavier and collects in the lower portion of the nasal passages, forming scabs of heavy mucoid material which can be expelled only by forcible blowing. "Post-nasal dropping" is an annoying symptom in most instances, and if the deflection is anterior there occurs an obstructing stenosis of the nares.

Objective symptoms range from (a) dislocation of the columnar cartilage which may be seen bulging into the vestibule, (b) a picture through the nasal speculum of a bony ridge along the floor of the nose, (c) an unequal distribution of the space caused by bulging of the septum with its accompanying concavity toward the corresponding side.

The treatment of deflected nasal septa is distinctly surgical, and relief is obtained by operation in the majority of cases, especially since the submucous route may be used which leaves no large areas of scar tissue with its dryness and scab, and since the removal of the wayward promontory of bone or cartilage leaves a functionating mucosa.

There are several indications for resection of the nasal septum in addition to correction of the deformity, *per se*, viz., in acute recurrent nasal inflammations with sufficient bulging to impinge upon any of the turbinal bones; in acute recurring inflammations of the accessory sinuses where the deviation prevents adequate drainage and proper aeration. Resection is also indicated in nasal polyp, and sometimes in pharyngeal and laryngeal diseases, not as a curative measure in the latter, but for the marked alleviation of symptoms which may be thereby secured. In middle ear disease and obstruction of the Eustachian tubes resection of the nasal septum has been productive of beneficial results.

In connection with submucous resection of the nasal septum, there are a few important points in technic which will be briefly described. Opening

wide the nostril of the affected side, with a sharp knife a vertical incision is made just in front of the anterior edge of the deformity, passing through the mucous membrane and perichondrium, care being observed to include the latter tissue in the incision; then with a flat, sharp elevator begin the separation of these two layers from the cartilage, continuing the elevation with a thicker and less sharp elevator until the area to be removed is uncovered; then the index finger placed in the other nostril, returning to the original incision, with a knife or sharp elevator the cartilage only is carefully incised to the opposite perichondrium. The elevation of the perichondrium and mucosa of the concave side is easily accomplished if the operator has not buttonholed the perichondrium or mucosa. After sufficient elevation has been secured, with the swivel knife, biting forceps or chisel, the offending cartilage or bone is removed, leaving in its place a septum consisting of mucous membrane and perichondrium, which will possess all the virtues originally intended.

It need hardly be stated that the operation is contraindicated in the very old, and also in the very young whose facial bones have not attained full growth; also in patients suffering from acute middle ear and pharyngeal lesions, and in syphilis, tuberculosis and other grave general diseases.

Submucous resection of the nasal septum is a much simpler procedure than perusal of the literature of the subject would lead us to believe. A general anesthetic, excepting in young children, is rarely required. The recommendation of certain operators that a general anesthetic should always be employed, represents the height of absurdity. Local anesthesia is obtained by the application of cocaine or novocaine on thin pledgets of cotton. The best results have been secured by cocaine crystals in adrenalin solution 1:1000, five or six grains of cocaine to one fluid dram of adrenalin. If care be observed that the cocaine solution does not come in contact with the turbinates or the outer nasal walls, there will be little absorption into the circulation, and hemostasis will be complete. It is impossible to properly execute the procedure in a bloody field, therefore the importance of hemostasis is emphasized. Properly performed under aseptic technic there should be neither complications nor sequelæ.

Fisher, in a recent paper, presents such an admirable summary that I am taking the liberty of reproducing it *in toto:*

"(1) The submucous operation, having but very slight risks, is indicated in all cases where the removal of displaced or hypertrophied septal bone and cartilage will restore the proper functions of the nasal chambers and their contents: such as cases where there is actual mechanical blocking, or where there is interference with ventilation and drainage of the sinuses, or where pressure on the turbinates produces headaches and other reflex phenomena; it is indicated in cases of deafness and ear suppurations, where nasopharyngeal trouble traceable to the septal deformity is contributing to such deafness or suppurations.

"(2) The submucous resection is not a panacea for all ailments of the nose and nasopharynx, and before doing one, it is well to bear in mind its limitations, especially as far as reducing the deformity is concerned, in spite of extensive removal of bone and cartilage; for instance, in a case where the deflection occurs in such a high position that it is not safe to extend the resection so far; in which case it must first be determined whether the removal of that which is possible, will give a satisfactory result.

"(3) The operation is absolutely contraindicated in all cases that show presence of atrophy, and should not be done in children except as a matter of last resort.

"(4) In cases of marked hypertrophy, with or without a deviation, it is well to try a Wassermann reaction before operating.

"(5) To get a good result, care must be taken to remove every bit of the deviation, going to the very floor of the nares if necessary; but not so with the upper end of the triangular cartilage, where a sufficiently large strip must be left for support.

"(6) The submucous operation is an office operation, and can be performed readily and safely without any particular preparation of the patient.

"(7) Most of the regrets in the cases operated on, come from not having removed enough bone, rather than from having removed too much; more particularly is this true of the bony ridges along the floor.

"(8) A good submucous resection might not produce the desired results because of failure to reduce an hypertrophied inferior turbinate previous to the operation.

"(9) In acquiring the technic of the operation, it is well to learn to rely on the sense of touch as much as, if not more than, on the sense of sight.

"(10) Packing, if employed, should be loose and carefully applied, and when once removed need never be replaced.

"(11) Persistent bleeding after the removal of

packing usually indicates infection, and the case should be so regarded and treated.

"(12) Serious injury to any vital parts during operation is extremely unlikely, unless extraordinary violence is employed, and whatever disappointments do arise are usually the result of excessive timidity on the part of the surgeon."

In conclusion I desire to emphasize the importance of careful nasal examinations as a routine measure, especially where there is a history of previous trauma. All so-called broken noses should be inspected both inside and out, and when in doubt it is better to use an intranasal splint than the familiar and useless piece of adhesive plaster across the bridge of the nose. If the cartilage is actually broken, the splint will maintain the fragments in correct apposition and prevent deformity from deviated septa which might otherwise result.

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GASTRIC ULCER VS. CHOLELITHIASIS.

In gall stones the pain is of paroxysmal type, usually coming on suddenly and suddenly disappearing. In stomach ulcer there is a sudden, sharp pain relieved by vomiting, and it generallly follows the ingestion of food. Following a gall stone attack there is a distinct soreness over the gall bladder, also a slight rise of temperature the following day. These symptoms are not present in ulcer. Vomiting is very often present in both lesions which, as stated before, relieves gastric colic and ameliorates or does not affect gall bladder colic. The pain of appendicitis is general, over the entire abdomen, but in a few hours localizing itself over the region of the appendix and becoming more or less constant in character. Vomiting is not present as a rule, but if it occurs twenty-four hours later, it is quite significant of perforation, occasionally this is not so, but more often it is present.—M. H. CREMER in *The St. Paul Medical Journal.*

OVARIAN ROENTGENIZATION.

Great care should be exercised in the selection of patients for *x*-ray treatment of the ovaries. A most careful local examination should be made to exclude cases having pelvic lesions which demand surgery. Especial care should be exercised to exclude those cases in which there is even a suspicion of malignancy.—SIDNEY LANGE in *The Ohio State Medical Journal.*

FURTHER EXPERIENCE WITH THE USE OF THE WIRE TOURNIQUET IN PARTIAL THYROIDECTOMY.

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Several years ago I reported, before the Texas State Medical Society, a "New, Simple and Safe Method for the Performance of Partial Thyroidectomy," by means of a wire tourniquet. Since then I have had occasion to employ the procedure fifty-six times in forty-two cases and have modified and perfected the technic considerably, so that I now feel justified in claiming that the method is a useful addition to the operative procedures in connection with goiter.

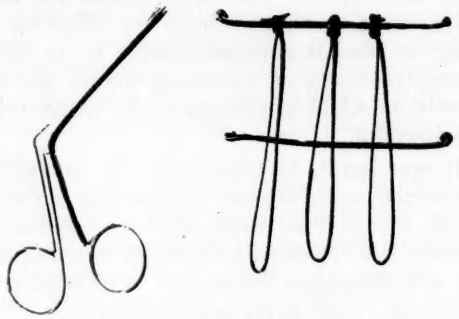

Fig. 1.

A satisfactory goiter operation should fulfil the following conditions: It should be capable of being quickly and readily done; it should not endanger the recurrent laryngeal nerves or the parathyroid bodies; and it should furnish easy and certain control of hemorrhage. I have reason to believe that the wire tourniquet does all of these things satisfactorily, and in addition enables one to remove as much or as little of one or both lobes as may be indicated, irrespective of their size.

Operative Technic.—The goiter is first exposed by a collar incision, and by separation, or perhaps division, of the sterno-hyoid and thyroid muscles (with the wire tourniquet division is seldom necessary.) After ascertaining the proper plane of cleavage, a lobe is dislocated, paying attention to the superior and inferior poles, which may project upwards into the neck or downwards beneath the upper portion of the sternum.

The lobe now lies loosely upon the side of the neck and can generally be pulled well out of the wound, thus putting upon the stretch the superior and inferior thyroid vessels and the attachments to the trachea and isthmus. Sometimes, but by no

means always, these attachments form a rather well-defined pedicle.

The gland is now ready to have done to it whatever may be required—a cyst or tumor may be enucleated, the whole lobe removed, or a partial thyroidectomy done. Up to this point the operation does not differ from any of those in common use; but from now on, if a partial thyroidectomy is indicated, which is usually the case, the procedure is entirely different.

The object is so to compress the base of the lobe, including all its vessels, that any desired amount may be cut away without fear of hemorrhage or injury to the nerves or parathyroids. This is accomplished by placing a piece of wire about the size

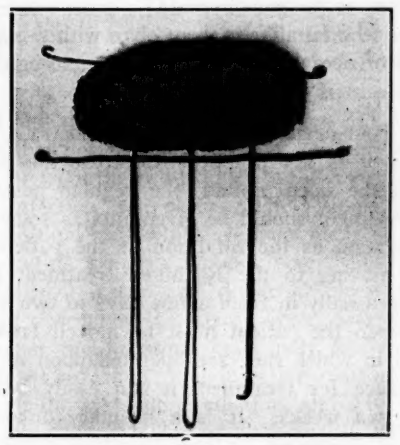

Fig. 2.

of a knitting-needle upon each side and tying these wires firmly together, thus forming a tourniquet which effectually controls *all* of the circulation, including both the superior and inferior thyroids.

As much as is desirable of the gland may now be cut away without fear of hemorrhage, the edges of the wound brought together and whipped over with a hemostatic suture of catgut, and the wires then removed.

There are, of course, a number of points to be observed which contribute to smoothness and success:

(1). The wires should be rather stiff, but not too rigid to prevent easy bending to suit the particular requirements. Number 17 is a good size. They should be cut with a wire-cutter so that they are long enough to project beyond the gland at each pole, without being long enough to interfere too much with the surrounding parts (Fig. 3). It is well to turn their sharp ends over into a loop, which can be done in a moment with a pair of forceps, to prevent injury to gloves and tissues (Fig. 1).

(2). The cord for binding the wires together must be very strong, so as not to break under the considerable tension necessary to obtain hemostasis. The best thing for the purpose is heavy braided-linen fishingline—about No. 2 or 3. Prior to the operation three of four sections are cut from this, each about a foot in length. These are formed into loops the open ends of which are firmly tied with square knots to one of the wires—three for a smaller goiter and four for a larger one (Fig. 1). If sections are to be removed from both lobes, two wires should be prepared in this way.

(3). By means of a small pair of blunt-pointed alligator-forceps (Fig. 1) plunged directly through the glandular tissue the closed ends of the three loops are then dragged through the lobe near its

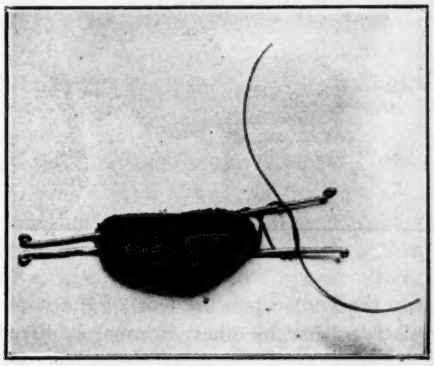

Fig. 3.

base, one at the center and one near each pole, thus pulling into place the wire to which they are attached (Fig. 2). (For purposes of illustration a rubber sponge has been used to represent the goiter).

(4). Another wire is now passed through the free ends of the loops on the side opposite to the first wire (Fig. 2). The loops are then divided and tied tightly, beginning with the one in the center, thus firmly approximating the two wires to each other (Fig. 3). The way in which this tying is done is of importance, only one turn (a half-knot) usually being necessary, because the roughness of the fishline and the circumstances of its application prevent its slipping. This single turn not only saves time, but it also permits the central knot to be drawn tighter at any time if desirable.

The two ligatures near the poles should not only be tied like the one in the center, but their ends should also be wound in opposite directions around the free projecting extremities of both wires and

again tied, thus giving additional security and compressing the poles more firmly (Fig. 3).

(5). The hemostatic suturing (Fig. 4) may be facilitated by making a v-shaped excision. In Fig. 4 much more tissue is left for clearness of illustration than is usually necessary. It may be better to use a double strand of fine catgut rather than a single and coarser one, and when the tissue is particularly friable or vascular it is often desirable to whip over the raw area twice instead of once. If a little care is taken at the poles it will be unnecessary to ligate the thyroid vessels separately—in fact I ceased to do this long ago.

(6). When the hemostatic suturing is finished the wires are removed. This can be done by cut-

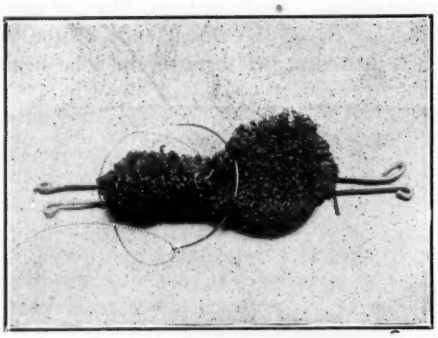

Fig. 4.

ting away the knots upon the side of the wire last put in place, so that the other wire may be lifted off with the remnants of the sutures attached; or the sutures may be untied from the projecting ends of the wires, which is easily accomplished, and the remaining half-knots slipped by pulling the wires forcibly apart.

There is seldom any bleeding of consequence from the suture-holes, but if any should occur it can be checked by compression between the fingers or by a catgut stitch.

The subsequent steps in the operation are such as are usually carried out under ordinary circumstances—stitching of divided fascia and muscles, drainage, and careful union of the skin with subcutaneous sutures or wire clips.

The advantages of the wire tourniquet are several: It is easily and rapidly applied, requiring no particular skill in its adjustment and saving considerable time; it effectually controls all hemorrhage, thus obviating the necessity for crowding the field with hemostatic forceps; it does away with danger to either the recurrent laryngeal nerves or the parathyroid bodies, because it is applied at a safe distance from them, and even if they should by any chance be caught, the pressure is not great enough to permanently injure them; it compresses the goiter without crushing it, which is of importance in Grave's disease at least; and, lastly, because the loops pass through the tissue the wires are prevented from slipping during the course of the resection irrespective of the size of the remaining stump. Neither clamp-forceps nor a ligature of any kind answer the same purpose, nor can they be used except in special cases. Forceps crush the tissues objectionably if they are tightly enough applied to prevent slipping when the lobe is cut away Sutures are usually placed with much difficulty, and if tight enough to be effective, they are apt to cut through, especially if the tissues are soft and vascular. Both forceps and ligatures may crush the nerves or the parathyroids.

Those who familiarize themselves with this simple method of operating, will, I am sure, recognize its merits.

POST-OPERATIVE ROENTGENTHERAPY.

When it is not practical to treat the patient through the open wound, the regular post-operative treatment should be given just as soon after the operation as the condition of the patient will permit moving to the Roentgen treatment room, which is usually in from a few days to two weeks. Even when the patient must be moved from the hospital in which they are operated upon to some other place for treatment, it can easily be done within two weeks. It is a mistake to consider Roentgen treatment as post-operative when it is first started after the patient begins to have some indurations of the tissues, some shooting pains, or other signs of recurrence.—GEORGE E. PFAHLER in *The Journal of Advanced Therapeutics.*

HARE-LIP SURGERY.

Most cases may well be prepared for post-operative treatment by education in feeding from the spoon or medicine dropper for several days, and in this manner eliminating post-operative action of the lip and palate muscles. Older children should be taught to cleanse the mouth frequently with mild antiseptic solutions for several days before operation.

Adhesive plaster strips may be applied for several days to coapt the cleft edges, in this manner largely eliminating post-operative tension upon the suture line. The child accommodates itself to a diminished respiratory inlet and becomes accustomed to the presence of the post-operative tension dressing.—H. P. COLE, M. D., in *The Southern Medical Journal.*

CHOLECYSTITIS.

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Two of the most prominent factors in the production of cholecystitis are (a) infection, and (b) obstruction to the biliary outflow. It has been demonstrated experimentally that virulent micro-organisms may be injected into the healthy gall-bladder without inflammatory changes resulting. If, however, obstruction to the flow of bile be produced by constricting the ducts, an intense inflammation of the gall-bladder ensues.

In clinical practice it has been found that the chief source of infection is some portion of the alimentary tract. The micro-organisms are carried by the portal circulation to the liver, and, some of them escaping the bactericidal influence of the liver cells, are wafted by the bile stream into the ducts and thence to the gall-bladder. If there be an obstruction to the free flow of bile from the liver, or from the gall-bladder to the intestinal tract, then infection will occur. The lesions involving the intestinal tract which are most likely to produce cholecystitis are (a) typhoid fever, and (b) appendicitis. Gastric and duodenal ulcers claim a certain percentage of cases; acute catarrhal processes in the intestinal tract may likewise be a course of infection; and infection may also occur through the systemic circulation, and it is possible that some of the cases of cholecystitis subsequent to typhoid fever originate in this manner, the germs being carried directly to the mucous membrane of the gall-bladder through the cystic artery and its terminal branches. Again, infection may travel upward through the duct from the duodenum against the bile current which has been retarded by some obstructive process. Extension of inflammation to the gall-bladder from contiguous organs is a comparatively rare occurrence.

Obstruction to the biliary outflow may be produced by swelling of the mucous membrane of the duodenum, by enlargement of the head of the pancreas, by malignancy, etc., and by adhesions resulting from gastric or duodenal ulcer, or other inflammatory lesion in the upper abdomen. Adhesions by constricting the ducts interfere with the free flow of bile. Cholecystitis is much more common in women than in men, the reason being, perhaps, distortion and relative displacement of the upper abdominal organs; tight lacing and frequent pregnancies by producing pressure upon the bile passages, are common causes.

In many instances it is impossible to determine whether there exists a cholecystitis with stones or without stones, and in this paper no attempt will be made to treat the two conditions separately, since in gall stones the principal symptoms are due to the accompanying cholecystitis. We know, or at least we believe, that cholecystitis is the principal factor in the production of calculi, and that on the other hand when once present the irritation produced by calculi will cause cholecystitis. There is thus a true vicious circle in the generation of biliary calculi. The two conditions are so intimately connected that it is unwise, at least clinically, to attempt to differentiate them.

It is surprising that many physicians may still be found who are unwilling to make a diagnosis of gall bladder infection unless the classical symptoms of pain, vomiting, and jaundice, are pres[illegible] In the majority of cases these classical symp[illegible] are not present, therefore we can no longer [illegible]old to this tenet. The most constant manifestations are those referred to the digestive tract, and it has been conservatively estimated that of all adult patients complaining of gastric symptoms, in at least ten per cent. these are due to cholecystitis. The gastric symptoms are sometimes distressing, there being noted pain, eructations of gas, nausea and vomiting. These symptoms occur during or soon after eating. The indigestion is qualitative rather than quantitative, i. e., the symptoms appear after the ingestion of certain articles of diet. It is quite common for patients to select a special diet for themselves, experience having taught them that they may eat certain kinds of food with impunity, whereas they must sedulously avoid certain other articles or pay the penalty for their indiscretion with an attack of indigestion. Some of them cannot eat sweets, others must avoid fruits; many of them cannot eat substances containing much fat or grease.

The cause of the gastric symptoms is not far to seek. When we consider that the pneumogastric nerve, in addition to supplying the stomach, sends filaments to the gall-bladder, and when we consider the intimate relation in which these organs are held by the so-called sympathetic nervous system, we can readily understand how the gastric symptoms may result in an entirely reflex way. In addition to this, in cholecystitis certain changes occur in the composition, reaction and alkalinity of the bile; this changed or modified bile destroys the normal balance and relation between the alkalinity of the duodenum and the acidity of the stomach, thus interfering with proper functional correlation. It must be remembered that the pylorus opens and permits the acid contents of the stomach

to escape into the duodenum, that it then closes and remains closed until the duodenal acidity is overcome by the alkaline secretion of its mucous membrane and the presence of bile. If the alkalinity of the duodenum is reduced, the contents will remain in the stomach longer, the pylorus will become more and more contracted, and at times pylorospasm results.

In many cases of cholecystitis definite changes occur in the pancreas, especially when the bile ducts are involved. They sometimes occur, however, when the gall-bladder alone is involved. The lymphatics along the bile ducts drain the head of the pancreas, and if these glands become enlarged to such an extent that the lymphatic stream is blocked, changes occur in the head of the pancreas (lymphedema) with subsequent alteration in its secretion.

In the earlier stages of cholecystitis it is the rule to have an excess of acid secretion in the stomach (hyperacidity). In extremely chronic cases, however, there is a lowered acidity of the gastric contents.

The pain of cholecystitis varies in severity from a mild epigastric discomfort to the most excruciating pain of gall-stone colic. In many cases of cholecystitis of the mild and chronic types, pain is practically a negligible quantity. In acute attacks pain is of two distinct types. One is a severe, aching, persistent pain due to inflammatory changes in the gall-bladder walls and to distension. When the process becomes more severe and involves the peritoneal coat of the gall-bladder or the peritoneum of the surrounding structures, the pain becomes very intense. In neither of these types is the pain colicky in character. The so-called biliary colic seems to result only from the passage of solid or semi-solid material through the ducts. Pain is located in the epigastrium and right hypochondrium, and radiates in many cases to the right subscapular region. It may extend upward into the neck and down the right arm. There is usually a point of tenderness posteriorly—at the border of the eleventh vertebra about two inches from the spinal column. In the milder types there is little or no tenderness nor rigidity over the gall-bladder. When the attack is more severe and especially when the inflammation extends to the peritoneum, there is pronounced tenderness and marked rigidity in the right hypochondrium. When the gall bladder becomes markedly distended (hydrops, empyema) the enlargement may be distinctly palpable. As a rule fever is not present in the chronic cases. With acute exacerbations the temperature rises. However, high temperature with pronounced irregularity, i. e., sharp ascent and decline, does not occur in inflammation limited to the gall-bladder (as it does in duct involvement), and the process may extend to gangrene of the viscus without the development of high temperature. The fundus of the gall-bladder is not very rich in lymphatics, therefore the absorption of toxic material is not great and the temperature does not reach a high point. As the neck of the gall-bladder is approached the lymphatic supply is more abundant, absorption is more rapid, and consequently the temperature is high and approaches the more pronounced irregularity that is seen in inflammation of the ducts.

Jaundice is seldom observed in cases of pure cholecystitis, either with or without calculi, and when jaundice is present it indicates either that the ducts have become involved in the inflammatory process, that a stone has lodged in the hepatic or common duct, or as rarely occurs that the lymphatic glands located at the junction of the cystic and hepatic ducts have become so enlarged that pressure from without causes obstruction of the ducts and jaundice results.

When a patient suffers from gastric disturbance, it is oftentimes difficult to determine whether the symptoms are due to a lesion of the stomach, to a lowered condition of the general health, to a neurosis, or to some distinct lesion within the abdominal cavity. In such a case it is necessary to obtain a careful history of the patient, noting the various symptoms and lesions which have occurred in the past, the time of appearance of the manifestations, the duration and regularity with which they occurred, their intensity and the manner in which they were relieved.. When gastric disturbances are present many physicians look upon the gall bladder as the source of the trouble only when infection and pain occur.

In the differentiation between cholecystitis and gastric or duodenal ulcer the following points are important: In gastric and duodenal ulcer periodicity is the rule, the attack persisting for days or weeks; work, worry, exposure, and infection, may provoke an attack; it is accompanied by pain, the formation of gas, sour eructations, and vomiting. The history will show that the affection is distinctly chronic, that it has probably persisted for years, and that the attacks have increased in duration and severity. The spring and autumn are favorite times for the onset of an attack. Pain and distress are the most common symptoms, being present in ninety-five per-cent. of cases. Intense griping pain or colic is present, and in severe types opium is required for relief. The pain is located for the most part in the

epigastrium, and radiation is uncommon in uncomplicated cases. When radiation occurs it may be suspected that the ulcer has extended to the peritoneum, or that some other lesion, such as cholecystitis, appendicitis, or renal infection is the cause. It is the time when pain occurs and its control that are characteristic and diagnostic. The pain occurs from one to three or four hours after eating, and is relieved by the taking of food, by the administration of alkalies, by position and rest. This is untrue of the gastric symptoms produced by cholecystitis, pain being worse at intervals but seldom entirely absent.

Graham has tersely described gastric symptoms in this way: "In the diseases which oftenest cloud the diagnosis, such as chronic cholecystitis and chronic appendicitis, we obtain our greatest diagnostic aid from the wide irregularity of symptoms during the period of attack. Yesterday pain came before meals; today, after meals; tomorrow pain may be an all-day miserable feeling; food-ease yesterday becomes food-pain today; the food-pain is wholly reflex; vomiting one day, and gas another; yesterday, well—today, in the depths mentally; nothing follows in sequence day by day because the stomach behaves properly unless irritated by the distant lesion, and this external lesion is irregular in its influence. The stomach then delivers what symptoms it may when the irritation is great enough."

The gastric symptoms in cholecystitis make their appearance either during or immediately after meals, differing in this respect from those due to chronic appendicitis or intestinal kinks, where the symptoms are due to interference with peristalsis in the small intestine. In the latter two conditions the gastric symptoms usually appear from one to two hours after taking food. In chronic appendicitis there is usually hyperchlorhydria, whereas in prolonged cholecystitis there is lowered acidity. Here again the history will be of great service. In appendicitis there will probably be a history (possibly years before) of a distinct attack of appendiceal inflammation. In intestinal kinks there will be a history of some antecedent disease which might produce adhesions. Acute attacks of cholecystitis accompanied by fever may simulate acute appendicitis or acute infection of the right kidney and ureter. Indeed, it may be impossible to differentiate between acute appendicitis and acute cholecystitis when the appendix occupies a high position. The leucocytosis in gall bladder inflammation is not as high as in acute appendicitis, nor does it appear so quickly. In acute surgical lesions of the right kidney examination of a catheterized specimen of urine from that kidney will usually give evidence of the renal disturbance. In kidney lesions pain is more likely to be in the back radiating to the front of the abdomen, to the groin, the thigh, etc., whereas in cholecystitis it is in the right hypochondrium and radiates to the back.

In chronic cholecystitis the exclusion of purely functional gastric disturbances and neuroses may at times be exceedingly difficult. The stomach stands in intimate relationship to a number of organs through its sympathetic connections, and reflex disturbances involving any of these organs may excite gastric symptoms. General impairment of health from constitutional or infectious diseases may likewise cause gastric symptoms. All of these must be eliminated in arriving at the diagnosis.

In the neurotic patient the symptoms may simulate cholecystitis one day, gastric disturbance the next, appendicitis the next, etc., and these are all silhouetted against a general neurotic background. The more the symptoms overlap the greater the probability of a pure neurosis and less the relief that may be promised by surgical intervention.

Based upon the clinical signs the diagnosis of cholecystitis either with or without calculi is not always easy of accomplishment. As already suggested the classical symptoms—pain, vomiting and jaundice—may be absent. Too great emphasis has hitherto been placed upon the diagnostic importance of icterus which if present is usually a late symptom merely indicating the supervention of obstructive lesions. Epigastric pain is a fairly constant symptom, and palpation elicits a special point of tenderness over the gall-bladder region. Muscular rigidity is seldom noted unless obstruction to the biliary outflow and considerable distension of the gall-bladder have already ensued. The normal gall-bladder cannot be palpated, nor is it possible by this method in the majority of cases to definitely determine the presence or absence of calculi unless the gall-bladder has become markedly enlarged. "The clinical diagnosis of cholecystitis, even when stones are present, is not always easy. With the palm of one's hand an area may be covered which could be involved in pyloric and duodenal ulcer, disease of the gall-bladder, appendicitis, stones and infection of the right kidney or ureter." The pain produced by small dermoid cysts and extra-uterine pregnancy may also be referred to the gall-bladder region. The importance of obtaining a careful history of the patient has already been mentioned, and consideration of the antecedent history may be of greater diagnostic assistance than present clinical signs. It cannot be too frequently reiterated that

the most constant indicative symptoms of cholecystitis are disturbances of digestion.

If after exhausting all available resources the diagnosis remains doubtful, exploratory celiotomy should be performed, especially where the symptoms become distinctly surgical in their significance. It must be remembered, however, that the milder degrees of cholecystitis are amenable to medicinal treatment, which consists of rest, a diet so regulated as to not produce any symptoms of indigestion, and careful attention to elimination. "Cholecystitis without stones is comparatively a common disease. The types vary in intensity from the mild, chronic catarrhal, to those characterized by necrosis of the mucous membrane, perforation, and other manifestations of severe bacterial infection. Cholecystitis is often associated with appendicitis (chronic) especially those forms in which foreign bodies, especially fecaliths, are present. Infective material from appendicitis may be picked up by radicals of the portal circulation and carried to the liver and there destroyed or excreted in a modified form with the bile. When such bile is delayed in the gall-bladder, cholecystitis may result."

In regard to the surgical treatment of cholecystitis, there is a wide difference of opinion. In cases where calculi are present, and where damage to the gall-bladder is not very extensive, relief may be expected to accrue from removal of the stones and drainage of the gall-bladder. Mayo claims that ninety per cent. of cures may be obtained by operation in such cases. If there has occurred extensive damage to the gall-bladder wall, i. e., if it has become thickened or fibrous, cholecystectomy is the better procedure. In all cases of cholecystitis with or without calculi where the so-called strawberry gall-bladder is found, cholecystectomy is indicated. In cholecystitis uncomplicated by calculi drainage does not afford the permanent relief that it does where stones are present, and many patients of this class after a few months again present gastric symptoms. According to Mayo fifty per cent. of cases are not permanently relieved by drainage. If, then, there is sufficient evidence to warrant an operative procedure upon the gall-bladder in cases of simple cholecystitis, cholecystectomy would appear to be the most logical procedure. However, the question is in an unsettled state, and the final verdict has not yet been reached.

Mayo states that chronic cholecystitis produces two types of gall-bladder: (a) large, blue, distended, which does not empty itself normally under compression; bile thin and foul-smelling: (b) thick-walled, whitish gall-bladder, often adherent; thick tarry bile mixed with mucus. Enlarged lymphatic glands are the rule in both types. If the symptomatic evidence that cholecystitis is present is characteristic, the gall-bladder must be opened. Sometimes the pathology is limited to a small area, but this cannot always be determined until the gall-bladder is incised. The so-called "strawberry gall-bladder" is one of the most frequent types. The disease is strictly confined to the gall-bladder, and the ducts if involved show only a catarrhal process. Radical operation cures because the ducts are not exposed to traumatism as in the presence of stones. "The milder degrees of cholecystitis when subjected to operation will not present a high percentage of cures, and under existing conditions should usually be considered medical rather than surgical." Practically all cases of cholecystitis and eighty per cent. of cases of gall stones should be treated by cholecystectomy according to the views of Mayo.

The ultimate results of gall-bladder surgery are not always satisfactory, in a certain percentage of cases the symptoms either persisting or recurring shortly after the operation. The persistence or return of symptoms may be due to the presence of calculi overlooked during the operation, to obstructive adhesions, or to the actual formation of additional calculi. In the majority of instances, however, the so-called "recurrent gall stones" are probably calculi overlooked at the original operation. The most unsatisfactory results are obtained in cases where no calculi are present, the operation revealing an inflammatory obstruction of the bile ducts with marked distension of the gall bladder from accumulated muco-purulent material. While incision and drainage would seem the ideal procedure under such circumstances, the ultimate outcome is oftentimes unfavorable, and permanent fistulæ have been known to occur. In this type the results following cholecystectomy may also be far from satisfactory in certain cases, although this operation is preferable to incision and drainage.

There is one class of patients upon whom, regardless of the character of the pathology and symptomatology, surgical intervention is usually unproductive of permanent beneficial effect, i. e., neurasthenics, and in this type operation is inadvisable excepting as a *dernier ressort*. As Griffin aptly remarks, "It has not been sufficiently appreciated that a neurasthenic individual, who complains more after operation than he did before, may prejudice literally hundreds against what might be to them a beneficient treatment."

Under no circumstances should cholecystectomy be performed during an acute attack of cholecystitis with or without calculi; for obvious reasons it is advisable to await subsidence of the acute symptoms.

FLEXION DEFORMITY OF THE KNEE. AN IMPROVED METHOD OF CORRECTION.

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Flexion deformity of the knee is a very common deformity. It occurs in the course of any inflammation in the knee whether rheumatic, gonorrheal or tuberculous.

Flexion rarely occurs alone; it is usually associated with posterior subluxation of the tibia. The backward pull of the hamstring tendons, especially the biceps, is responsible for this. The diagram (Fig. 1) made from the x-ray picture shows this clearly. Efforts at correction of the flexion deformity by the usual methods must result in the production of a posterior subluxation, or if already present must increase it.

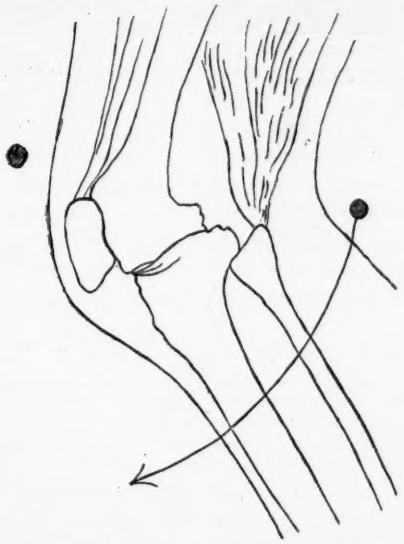

Fig. 1. Flexion deformity sketched from x-ray picture. Cross bars shown in section. Arrow indicates direction of force applied.

A method for correcting this deformity must be effectual and simple. It must really reduce the posterior dislocation while it is also extending the knee; and the apparatus used should be inexpensive and easily procurable.

The method here described fulfils these conditions. It is positive in its action, it requires the fewest assistants and the least amount of physical force. The materials can be procured at trifling expense at any hardware store. (Fig 2) They are two rods of Bessemer steel, ½ inch in diameter and 14 inches long, 2 dowels (birch wood) 1 inch in diameter and 2½ feet long, one steel bar may be bent at both ends to prevent slipping of the dowel. The dowels may also have a ½ inch screw-eye placed at one end, to give the dowel a firmer hold on the upper cross bar.

A circular plaster of Paris dressing or cuff is first applied to the thigh and another to the leg leaving

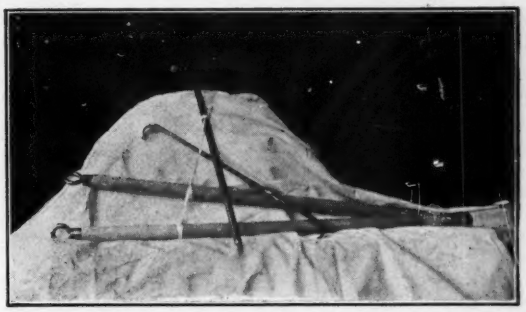

Fig. 2. Details of apparatus. Two wooden rods with a screw eye at one end of each bar. One straight steel rod 14 inches long. One rod curved at the ends.

an open space about 2 inches wide at the knee joint. (Fig. 3) Great care must be used in padding these dressings. A thick piece of felt is to be placed on the anterior surface just above the patella, and another piece of felt on the posterior surface near the buttocks. The lower dressing has one pad under the popliteal space and another on the front of the leg just above the ankle.

We incorporate two bars into the dressing, one

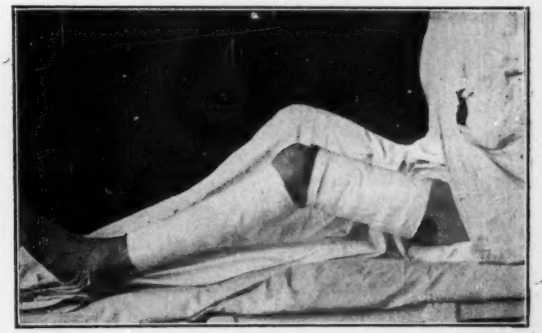

Fig. 3. Two plaster cuffs made, showing position of felt padding.

just above the knee cap in front and one just below the popliteal space in the back. The straight bar is placed in the upper cuff, the one with both ends curved is placed in the lower cuff as shown in the photograph (Fig. 4).

A day is allowed to elapse for the plaster to harden. The patient is then anesthetized and the stretching is done.

This is accomplished in the following manner. The two wooden dowels (or broom handles) are placed in the position as shown in the illustration, (Fig. 5) one dowel on the outer and one on the inner side of the knee, bearing on the upper cross bar, and caught under the lower bar.

An assistant then holds down the thigh or it may be tied to the table. The operator now pulls up on the two dowels much as one would hold up the

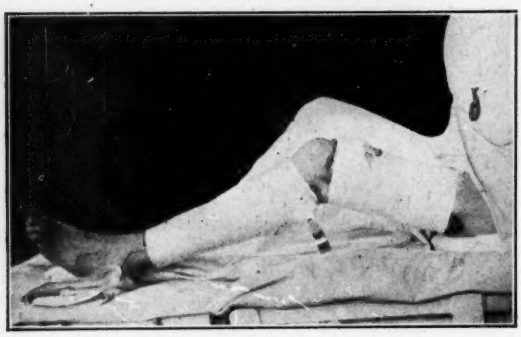

Fig. 4. Showing steel bars in place.

two handles of a wheelbarrow, pulling up slowly so that the hamstrings may stretch. The amount of leverage obtained is very great, enabling one to accomplish a great amount of correction with very little effort.

When the desired amount of correction has been obtained a nurse or assistant can hold the stretching bars to keep this corrected position, and a plaster

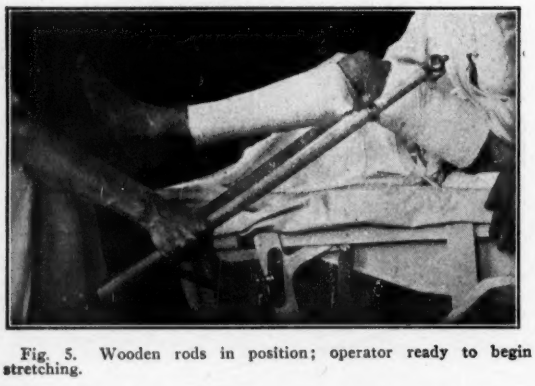

Fig. 5. Wooden rods in position; operator ready to begin stretching.

of Paris bandage is applied over the open space at the knee joint thus connecting the lower with the upper cuff (Fig. 6).

The application of this bandage is very easy because the long cross bars above and below the knee allow the stretching dowels to be held far apart, giving wide space all around the knee for the bandage to be applied.

The diagram (Fig. 1) shows how when the apparatus is used the tibia is drawn down and forward, the pressure being exerted on the head of the tibia in the direction shown by the curved arrow. This arrow is part of a circle having its center

Fig. 6. Stretching is finished. Assistant holds down thigh; a nurse is holding up the wooden rods; operator is applying the plaster of Paris bandage.

at the upper cross bar its radius being the distance between the upper and lower cross bars.

The pressure made as indicated tends to draw the tibia downward from the femur and also forward to correct the posterior deformity.

I have used this method of stretching for the past eight years and have found it to be very satisfactory.

TRAUMA FOLLOWING GOITER OPERATIONS.

All surgeons know of the evil effects of operative trauma, and all that applies in other fields is apparent in trauma following goiter operations, with the additional danger of increased absorption of the secretion which is squeezed from the gland by rough handling. Blood escaping from the gland should not be allowed to flow over the tissue which has separated, and as the operation proceeds salt solution packs should be advanced with the line of separation. As few instruments should be used as possible, and all large vessels should be ligated at once. Every tissue should be handled as gently and as little as possible. The gland itself should be handled with the greatest care. As little hemorrhage as possible should be had. Our first efforts should be directed towards ligation of the superior vessels, and all large arteries and veins should be ligated or cut between forceps. The patient should be placed in position with head elevated about 60 degrees. Shock should be obviated in every way. Of course, trauma, hemorrhages, prolonged anesthesia and operation all tend to produce shock, but other things, if obviated, would tend to minimize it; namely, correct preparation of patient.—W. L. CROSTHWAIT in *Texas Medical Journal Red Book.*

CARCINOMA OF THE JAW.

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Five years experience as assistant surgeon in a hospital service to which an unusually large number of cases of carcinoma of the jaw and mouth are admitted has led me to the conclusion that early diagnosis of malignant disease in this region is not made as frequently as it is in some other parts of the body. It has also engendered the belief that there is need for more thorough operations than are generally performed in well-developed, though still comparatively favorable cases. In such cases incomplete operations fail to do good, often do harm by stimulating the neoplasm to more rapid growth, subject the patient to a certain degree of immediate danger, and furthermore are very liable to discredit surgery.

Concerning the first of the propositions above set forth, it may be stated that failure to recognize incipient carcinoma of the jaw may perhaps be due to its relatively infrequent occurrence, so that physicians do not see the disease here as often as they see it elsewhere and consequently are not very familiar with its early characteristics and its mode of evolution. Diagnosis will be much simplified if it be borne in mind that practically all cases of carcinoma of the jaw begin upon the epithelial coverings of the bone and that lesions there situated which do not heal kindly after the removal of any detectable causes of irritation and the application of simple remedies are almost surely malignant. Lesions within the mouth are easily accessible. They can be exposed and examined thoroughly and if desired a piece of tissue can be removed for microscopic examination. The early removal of such suspicious lesions with the knife will save many patients from dangerous and mutilating operations later, which at best cannot give so good a prognosis as safer and less extensive procedures more opportunely performed. Particularly is this true of indurated ulcers. Unfortunately, carcinoma beginning in the antrum cannot be diagnosticated so easily. Severe maxillary pain for which no adequate cause is determinable, accompanied by edema of the nasal mucous membrane and nasal hemorrhage, should arouse suspicion of its presence. Primary central carcinoma originating in the substance of the bone is very rare and can develop only from remnants of embryonic dermal structures. Often it will be well developed before it can be diagnosticated.

The usual history of our patients was to the effect that they first became aware of a sore spot or erosion in some part of the mouth, to which they paid little attention until increasing annoyance led them to seek medical advice, and then in many instances at least, that they were subjected to some method of treatment which had no beneficial effect whatsoever. And so they kept getting worse instead of better, going from one doctor's office or dispensary or hospital to another, until finally they landed in Blockley, often at a stage in their disease when nothing could be done except to assuage the acute suffering attendant upon their last days. The trouble frequently began around the last molar tooth, though in many cases it originated further forward along the alveolar process, and in a few cases it apparently began in some other part of the mouth and extended to one of the jaws. Thus two patients first noticed a lesion on the lip and one on the floor of the mouth. Very often the patient thought that a tooth was diseased and had it extracted. In such cases healing failed to take place.

From these considerations it is apparent that much good will come from teaching the laity to understand the possible inherent danger of an apparently trival lesion of the mouth or jaw which fails to yield to a brief course of treatment, and also from further impressing the importance of such lesions upon physicians and dentists.

One great mistake has been to assume that many cases of carcinoma were syphilis, especially when a positive Wassermann reaction was reported. Some of our patients with far advanced carcinoma gave the history of having had one or more injections of salvarsan at a time when the carcinoma was operable.

That tertiary syphilitic lesions of mucous membranes may furnish the source of irritation which produces malignant cell proliferation is not to be doubted. Twice I have seen carcinoma develop upon leukoplakia in patients who gave a syphilitic history. What I wish to emphasize here, however, is that the two diseases, syphilis and carcinoma, may attack the same person quite independently of each other and that the one should not be mistaken for the other. If a lesion of doubtful nature in a patient giving a history of lues or having a positive Wassermann reaction does not yield promptly to antisyphilitic treatment, then it should be removed by the knife. A single injection of salvarsan will usually make a profound impression upon it if it be specific.

So far as epulis is concerned, the fibrous kind, which is exceedingly rare, has little about it to confuse one in making a diagnosis. It is a well-defined tumor of uniform consistency, covered by unim-

paired mucous membrane, and appears on the alveolar process, usually in the region of the incisor, bicuspid, or first molar teeth, sometimes between the incisors, but almost never behind the last molar where carcinoma so often begins. The sarcomatous epulis, though more vascular and more rapid in growth, does not ulcerate until it has attained such a size as to impede the circulation in its overlying mucous membrane, or until the teeth irritate it and produce mechanical ulceration. This form of epulis will slowly invade the body of the bone, although the statement is sometimes made that it remains confined to the alveolar process.

Actinomycosis, usually beginning around a carious tooth, gives rise to an indurated swelling in the contiguous parts of the jaw and face, and if the patient is seen before the formation of fistulae, one might suspect a malignant condition. Its duration, the absence of extension upon the mucous membrane, together with freedom from lymph-node involvement at the time when marked tissue changes exist in the maxillary or mandibular regions, all help in differentiating it from malignant disease. Recovery of the ray fungus from the lesion within the mouth and the eventual formation of discharging fistulae in which these fungi are also found make the nature of the case plain.

Tuberculosis of the jaw is very rare and hardly enters into the question of diagnosis. It is characterized by progressive molecular destruction of the bone, unaccompanied by inflammatory involvement of the superjacent mucous membrane, and unassociated with pain.

With reference to the treatment of carcinoma of the jaw, it may be stated that want of faith in the power of surgery materially to arrest the progress of the disease is an evil which must be overcome before the best results can be obtained. Often has it happened that patients with distinctly operable neoplasms have been advised against operation on the ground that their disease was so far advanced that it could not be entirely removed, or that it would return if removal were undertaken. They were told that they might just as well be saved the stress and danger of a surgical intervention which would have no permanent effect. Of course, this last statement is true with regard to very late cases, but it certainly does not apply to any case in which there is a reasonable chance of completely removing the neoplasm, even though its removal entail an extensive mutilating operation. Naturally the experience of the individual surgeon will be one of the factors in determining whether a case is operable as far as he is concerned.

It has been our experience also in hospital and private practice that patients themselves will often refuse operation at a time when the chance of cure is very fair and then be willing to submit to it later when it can do them no good. In some instances of this kind they make the decision by the exercise of their own judgment or from personal feeling in the matter; in others they are evidently influenced by previous pernicious advice.

The work of a few surgeons, notably Dr. William J. Roe, my chief at the Philadelphia Hospital, and Professor Tavel, of Bern, stands preëminent in this field of surgery. Both of these gentlemen have patients now living and well, who were subjected to the most extensive operations six, seven, eight or ten years ago, and Professor Tavel has some who have gone much longer without any trouble. When I was visiting in Bern in 1909 and first became familiar with his work he told me that he had one patient on whom he had operated fourteen years before, removing practically one-half the face, both the soft and hard parts, and making a block dissection of the tissues of the neck on the affected side, who had remained absolutely free from recurrence. One of Dr. Roe's patients from whom he removed the superior maxillary, malar, nasal and palatine bones, together with the pterygoid process and septum of the nose, and also enucleated the eye, is now well and free from recurrence after ten years. Such cases as this show what it is possible to do by good surgery in a certain, even if small, percentage of advanced cases.

In preparing this paper the cases of 36 patients have been studied. All were in men except one. In twenty cases the mandible was affected, in thirteen the maxilla. In three it was impossible to ascertain which bone was affected first, for the disease was far advanced when the patients were admitted, involving mouth, face and neck, and no adequate history could be obtained as to its initial site. One of the patients was moribund when admitted. According to the patients' own statement, their trouble began at periods varying from three months to two years prior to the time they came under our observation. It is probable, however, that in some cases it had been present longer than the patients had been aware of. Of these thirty-six patients primary operation was done upon ten and secondary operation upon one other who had been operated upon several months before in another hospital. Seven others who had been treated surgically elsewhere were also admitted to our service, but with one exception their condition contraindicated further surgical intervention. One patient among this num-

ber, whose condition was favorable for another operation, remained in the hospital only one day. Of the remaining eighteen patients five refused operation, the condition of one being very favorable and that of the other four comparatively favorable. Thirteen were inoperable at the time of admission and all died in the hospital at times varying from twenty-four hours to three and four months.

After the primary operations there were two immediate deaths. Another patient succumbed nine days after operation and one more of the number six weeks after operation. One died of recurrence eight months after operation. One patient operated upon in October, 1909, died of recurrence in July, 1915, five years and nine months after the operation. His life was materially prolonged by surgery. One other died from recurrence, but the exact time of his demise could not be learned. One is free from recurrence five years after operation. One is free from recurrence four years and seven months after operation. One operated upon in February, 1915, is still in the hospital, having had two plastic operations. The wound inside the mouth is not quite healed.

Seven others who had been treated surgically elsewhere were also admitted to our service, but with one exception their condition contraindicated any further surgical intervention.

It must be admitted that this is a drab colored record showing, as it does, that all of the patients except two finally succumbed to the ravages of their disease. It is not, however, without a bright spot, for analysis of ten cases in which primary operation was done shows that two patients have passed the four year limit and that one of them has gone beyond the five year limit. Of course, no one can say when carcinoma is cured and in these two cases recurrence may eventually take place. The patients' chances for continued good health, however, seem fair. In comparison with certain series of cases which have often been quoted our percentage of late freedom from recurrence is high. For example, in forty-nine cases collected from various sources by Martens only two patients remained free from recurrence at the end of three years, and of twenty-three cases at the Breslau Clinic not a single patient remained free as long as three years.

It is not improbable that a series of thirty-six cases occurring in private practice would yield more favorable results than this series of hospital cases. As above stated, five patients whose condition was relatively favorable refused operation. Among the better class of patients it is very likely that some so affected might have accepted operation. Moreover, thirteen were absolutely inoperable upon admission. It must not be forgotten, however, that there was a time in the evolution of their disease when each and every one of them was a good surgical subject, and that if they had been more fortunately placed in the social scale, some of them at least might have secured the benefit of more intelligent advice and better treatment than it was their lot to obtain.

So far as the technic of our method of operating is concerned a few words will suffice—everything diseased is to be removed unless its complete removal entails the destruction of vital structures. In some cases integument, muscle, bone, blood vessels and nerves will all have to be ruthlessly cut away. Such operations are not the kind for timid operators to undertake. Preliminary ligation of the external carotid is invariably practised and not the slightest harm has ever been known to result from it. In addition to controlling arterial bleeding during the operation it lessens the liability to secondary hemorrhage. Venous bleeding from the pterygoid plexus is apt to prove very troublesome, and, of course, the superficial veins as well as some of the deeper ones which pass through bony foramina will also bleed. When the lymphatics of the neck are involved block dissection is made. As the operation is a long one, it is very necessary that the patient shall not be deluged with ether. In fact just a sufficient degree of anesthesia should be induced to make him insensible to pain and to keep him from resisting. If he begins to come out it is easy to give him a little more ether. In this kind of surgery the ideal anesthetist is the one who can carry the patient along quietly under light anesthesia for an hour and a half to two hours or even longer if need be and then have him in such a condition at the completion of the operation that he will begin to mumble or talk as the dressing is being put on or as he is being wheeled out of the operating room. We have had a few internes at Blockley who could do this. In many cases it will be possible to close the wound at the time of operation. In others one or more plastic operations will be required.

It is believed that careful observance of the principles expounded in this paper will do considerable to lessen the incidence of carcinoma of the jaw and also accomplish something in reducing its mortality. Naturally the most is to be expected from prophylaxis and the prompt removal of incipient suspicious lesions. For the latter I make an earnest plea.

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URETHRAL STRICTURES.

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The treatment of passable strictures is conducted either by dilatation, or by a cutting operation, the latter by either internal or external urethrotomy. Dilatation is the treatment of choice for all strictures, even though a small bougie, or sound, must be used at first, and the caliber gradually increased and the stricture gradually dilated. This operation should be repeated every few days. If the intervals are too short, the urethra may become irritated, and spasm be induced, and the lumen of the canal temporarily diminished in size due to traumatic inflammatory swelling; but by keeping the patient quiet for a few days on a restricted diet, and the bowels well opened, the spasm will soon disappear. Should time be an important factor, rapid dilatation may be employed by passing several sounds, each of a size larger than the preceding one, at one sitting; or continued dilatation may be resorted to by keeping the patient in bed, and tying a small instrument in the urethra for forty-eight hours, after which time it should be removed, and a sound of larger caliber introduced.

The plan of forcible dilatating has few if any advantages. It consists in passing through the stricture an instrument which has two shafts, and may be divided by a thumb screw at the top; thus the scar tissue is divided or torn by forcible dilatation. The danger of this treatment lies in the great tendency—when cicatrization is complete—to form even a more dense, or impassable scar. But which ever one of these methods is adopted, it is essential that the physician and the patient keep ever at it, and that the sounds be passed repeatedly and at regular intervals; otherwise the treatment will be of no avail.

The treatment for obstinate, deep, tense strictures is urethrotomy, either external or internal. External urethrotomy is the ideal cutting operation for deep urethral strictures because this treatment restores the urethra to its normal condition. It has frequently been undertaken, and with great success, in strictures of the deep perineal portion of the urethra. It is not so satisfactory in the penile urethral strictures. Internal urethrotomy is performed by passing an instrument through the stricture and dividing it from behind forward, or from before backward. The instrument of choice certainly would be one that meets all the requirements for entering the smallest as well as the largest strictures; it should be provided with a filiform bougie to penetrate the smallest strictures, a shoulder to rest upon the strictures, and a flat base just above the stricture to facilitate an easy opening of the urethra in open operations.

A few years ago all strictures of the anterior urethra were cut. To-day this is rarely done, chiefly owing to the teachings of Oberlander, and to a better perception and continuously increasing knowledge of careful dilatation. A dilatation of a stricture done once only, stretches it, and allows an instrument of accurate size, according to that of the scar, to slip through, but in order to benefit or increase the lumen, its continuity must be broken; or the scar must be replaced by an elastic, flexible, soft and absorbable material. A sound, or a bougie in the urethra exerts a dynamic influence, according to Oberlander. It induces retrograde metamorphosis, with a reconversion of fibrillary tissue into the ordinary small cell deposit, permitting an absorption of the scar. It has been suggested that the cells of the infiltrate are rendered soluble, or peptonized; and again that absorption is favored by a teasing, or tearing apart of the cells, as is the theory of Bier's artificially induced hyperemia.

The instrument which I think fully meets all the requirements is the one devised by Young. It is so constructed as to permit the operator to pass the knife down to the seat of the stricture without damage to the anterior urethra. It is provided with some mechanical means of informing the surgeon when he has completely divided the scar, thereby avoiding damage to the underlying portion of the urethra. The urine should be neutral because the acid, or alkaline crystals cause an irritation of the mucous membrane, resulting in an excessive deposit of scar tissue. Then after the urethra has been thoroughly cleansed it may be anesthetized by a weak solution of novocaine. The instrument is now introduced, the filiform bougie penetrates the scar, and the shoulder of the instrument rests upon it. The knife is then drawn upward, and the scar completely divided. After carefully examining and determining that every portion of the urethra is of normal size, as measured by a bougie, a large urethral sound is passed, according to the size of the normal urethra. If the hemorrhage is profuse, a rubber catheter is passed and pressure exerted from the outside against the catheter, and in this way the hemorrhage is controlled. The catheter is left in place for 24 to 48 hours, and the bladder irrigated through it, with any of the mild antiseptic solutions. This irrigation should be done two, four or five times a day, according to the character of the urine. I recommend keeping the patient quiet, giv-

ing large quantities of water and urinary antiseptics. After the fifth day, the use of sounds of sufficient size should be begun to keep the opened stricture constantly dilated.

It must be remembered that a urethra which has once been strictured can be kept open with much less difficulty by passing a series of sounds at regular intervals than by allowing recurrences of the stricture interrupted by spasmodic dilatations. Inas much as the formation of a soft pliable scar requires a long time, this treatment must be continued for several months.

External urethrotomy, which consists in opening the urethra through a median incision, is necessary in deep urethral strictures which close immediately after dilatation, or are so dense that they cannot be dilated at all; or in chronic severe cystitis, which cannot be relieved by other treatment, in which case perineal drainage is indicated. If the stricture is passable, there is no necessity for an immediate operation, and urethra and bladder should be irrigated. Urinary antiseptics may be given, and the perineum prepared antiseptically; about 8 ounces of boracic solution should be injected into the bladder and allowed to remain, as this renders it much easier for the operator to determine when the bladder is entered. A staff is passed into the urethra with a small filiform bougie, and a shoulder to rest on the stricture, and a flat anterior surface to cut down on. These should be held in proper place by an assistant. The incision is made in the median perenial line, carrying the dissection carefully down so as to reach the groove in the staff behind the stricture. The knife is then brought downward following the groove, and the scar or stricture is completely divided; any fistula which may exist, are laid wide open, curetted, purified and allowed to heal by granulation.

Generally speaking, external urethrotomy is a comparatively easy operation with a guide as the above described, but in cases of tight, tortuous, or complete strictures, the operation often becomes exceedingly difficult. The method of operating will depend upon the conditions found in the examination. Under anesthesia and before beginning the operation a small bougie should be passed into the bladder, if possible, and a catheter should be threaded over it and an attempt made to enter the bladder. If the bladder has been entered, urine will escape when the bougie is withdrawn. In this manner the bougie acts as a guide for the operation. If, however, the instrument has not entered the bladder, but lies either in the membranous or the prostatic portion, or perhaps just in front of the cut-off muscle, the operator must be satisfied with a guide in the stricture or as near to the stricture as possible.

It is very difficult sometimes in a tortured urethra to find any sort of a guide which will assist one in entering the bladder, and dividing all the strictures above. It has, however, been demonstrated that a solution of methylene blue, when injected into the urethra, will penetrate and stain the canal in such a manner that it can easily and thoroughly be followed. A solution of one-fourth gram of methylene blue in fifty c.c. of distilled water is generally of the proper strength. Stronger solutions cloud the field of operation when the urethra is incised and weaker solutions do not stain the urethra sufficiently to enable the surgeon to follow the entire tortuous course. The solution is injected with an ordinary urethral syringe, just previous to the operation. It requires some attention and skill to properly introduce the methylene blue into the urethral canal, on account of certain anatomical peculiarities found in strictures. Not infrequently is there a pouch or dilatation behind, but occasionally there is one also in front of the stricture. This is due, however, to the shoving forward of the strictured portion of the urethra caused by the pressure of urine in the bladder. Or there may be distortion, with a pouch formed at either side, anterior, or posterior to the normal urethral passage. The injection should first be made by gentle pressure, and the fluid allowed to gravitate or slowly find its way through the tortuous urethra; then a little more force must be used to thoroughly fill all the pockets on either side, in front, or behind the urethra. During the entire process of injection, the penis should be brought straight up in order to straighten out the canal as nearly as possible, and thus facilitate the passage of the methylene blue into all the recesses of the strictured urethra. After the solution has remained in the urethra for a few minutes it is washed out with sterile water, and the sounds, or bougie, or a staff, preferably of the sort above-named, is passed as far as possible, and the operation is begun. The urethra is now laid open, and retracted with forceps, or silk worm gut, and the course of the canal is easily followed by the stain of the methylene blue. The easiest procedure probably is to carry the dissection down with a knife or a pair of scissors and using the methylene blue for a guide in impassable strictures. It will often be found that when the urethra is opened and the scar, or stricture incised according to above method, that the urethra is amply large enough to cover a large sound.

A case of my own clearly demonstrates the efficiency of the methylene blue as a guide.

A young man, 26 years, old who had had gonorrhea three times within one year, and prided himself very much on his ability to stop the discharge in two or three days, entered the hospital complaining of difficulty in urination, and slight retention, and had to be catherized. He left the hospital, and in the course of a month, returned with complete retention of urine. Examination showed no evidence of enlargement of the prostate gland, and it was impossible to pass a catheter. A small sound met some obstruction in the penile and obstinate resistance in the prostatic portion of the urethra. It was impossible to pass a filiform through the prostatic stricture. The patient's temperature rose to 103°, he had sweats, chills and fever, and it was necessary to resort to external urethrotomy. Under general anesthesia it was impossible to pass the smallest filiform bougie. I then injected methylene blue, as above described, and passed a staff down to the prostatic stricture. The ordinary median line incision was made down to the tip of the sound, and the stained urethra showed up very distinctly at this place, although it was impossible to follow it farther as the methylene blue had gravitated into a small passage at the right of the urethral canal. On straightening the urethra, I was able to find a small pin-hole opening, and an incision through this dense mass of scar tissue revealed considerable methylene blue which had been held below the scar. With this came a gush of bluish urine, and I was satisfied that I was in the bladder. After the scars were incised and the mucous membrance brought to the median line, I had ample urethra to cover a sound of good size.

The patient is placed in bed following the operative procedure; the perineal tube is attached by means of a glass, coupled to a piece of rubber tubing, long enough to extend over the end of the bed and drained into a glass flask, or bottle on the floor. It is well that this flask should contain a mild antiseptic solution so that the end of the tube may rest in same. In order to prevent the dragging of the tube upon th perineum, it is best to fasten adhesive plaster to same. The bladder should be irrigated twice a day, or oftener, with a mild solution of boracic acid, or any other antiseptic. It is often advisable, especially in very obstinate strictures, that a metal catheter be left or tied in the urethra, answering the twofold purpose of serving as a constant dilator and promoting irrigation. Sounds should be passed every day, or every two or three days until the perineal wound closes, which usually takes from two to three weeks. After each passage of the sound the bladder must be thoroughly irrigated with from one to three thousand solution of silver nitrate, or some similar antiseptic. Not infrequently there is a post-operative rise of temperature in the evening and on the following day, ranging from 99° to 101° F. In complicated cases with cystitis or uretheritis the temperature may go to 103° to 106°. Many times there is a pronounced urethral chill following the passing of a sound or catheter which may usually be abated by a small dose of opium; following these chills the sound should be passed less frequently. Copious drafts of water promote a flushing of the bladder, and if boracic acid, urotropin, or salol are given, they, aside from acting as mild antiseptics, will assist in preventing cystitis. After the patient is up the urethra should be kept open by repeated and systematic dilatations until healing is perfectly complete. After discharging a patient it is well to have him return in five or six weeks for examination, in order to determine if any tendency toward contraction has developed.

If any such tendency exists it will manifest itself within a few weeks, but by repeated examinations contraction may be forestalled and the patency of the urethra insured. If at the end of eight weeks after the operation a full-sized sound can be passed into the urethra, we may be reasonably sure that a cure has been effected, but even in this case an occasional sounding will never be entirely amiss.

THE EFFECT OF SCHOOLING OF TO-DAY UPON SURGERY IN THE FUTURE.

WILLIAM A. HARROUN, M.D.,
KANSAS CITY, MISSOURI.

Renan said of the Roman emperor-philosopher, Marcus Aurelius, that "his philosophy is the absolute religion, which arises from the fact of high moral conscience facing the universe. It knows no race nor country; no revolution, no discovery can change it." The motto of Chilo, one of the seven wise men of Greece, was "Know thyself." A bit of Marcus Aurelius' philosophy, "If thou art engaged in the act of picking up a pin, attend to that and that alone, then thou wilt do it well."

Twenty-five years ago little was known of the cause of sickness, bacteriology, histology, pathology, physiological chemistry; and the use and usefulness of the microscope were in an embryonic state. Suppuration and temperature were essential elements in the process of wound healing, so much so that a temperature of 100° or 101° was termed a wound healing temperature. And at a later date, after the laboratory man had made some strides, we rather looked at him askance from the surgical field, regarding him as a harmless creature of very little, if any, use to us and not to be depended upon. The diagnosis could always be made after we completed the work in a given case and that

seemed to satisfy us for a time. Following a state of seeming quiesence, the laboratory man began to show us some things that sent us reeling, and from that time on developments have come thick and fast, one upon the heels of another, like the mysteries of an ever-changing kaleidoscope.

First, the infectious diseases: the organisms segregated, isolated and classified, followed by a determination of the amount of harm they were capable of doing and what conditions were most favorable to their growth, a study of their respective homes in the body, how they grew and how they gained entrance into the tissues were dealt with. The bacteriologist has proven his end, and we know to-day that what is called disease is usually some form of microscopic life manifesting itself and that it is a perfectly natural scheme of nature for these pathogenic microorganisms to enter the tissues and produce disease and that they have just as certain a place in the universal arrangement of things as has man and they are constantly disputing possession of premises with him. Each organism as isolated called for some means with which to combat or kill it. The result as shown in the health records, following the incoming use of vaccines, serums, anti-toxins, and classification of surgical from medical diseases permitting surgical intervention at sufficiently early time to effect a cure, furnishes evidence of what has been done along this line. Everyone knows what has been accomplished in the treatment of syphilis.

The *x*-ray, and the cystoscope have furnished means of ocular inspection of fractures, of obstructions of the gut, of inflammatory conditions of the stomach, of gall-bladder, of duodenum, of stone in the kidney, the ureter, the bladder, and of foreign bodies elsewhere in the body together with size, contour, and position. These things have been worked out so rapidly that it almost makes one gasp for breath. The one remaining bugbear is cancer. But as a result of schooling the profession, a larger percentage of carcinoma is detected at an earlier date in its history than formerly and the result of early operation has been proved.

Now that the cause of disease has been worked out to such an extent, the popular trend of thought is directed along the lines of prevention, or the conservation of health. This line of thought has ushered into existence some good things, some foolish things, and some bad things, out of which profit is to be counted by the public and the profession, "who give thanks to the good things," and I presume the manufacturer of certain vaccines, serums and other sterilly loaded ampuls of something, and last, but not least, the politicians have some thanks to offer.

I believe the time has come when the medical profession should take the public into its confidence and school it to a further degree than the present plans contemplate. It would seem that in teaching the children of the present generation hygiene and sanitation it would be necessary to teach them first to know themselves. An elementary but sufficiently comprehensive course in medicine could be taught. They would then understand the reason for sanitation and hygiene, and would study them in their natural order. If we are to create a new structure ,and that seems to be the plan, we must first build a foundation. "If we are to be consistent, no line of treatment can be intelligently outlined until a diagnosis is made."

There is a large body of the lay community of ever-increasing intelligence interested in the new things in medicine and surgery. They are very eager to hear any little thing that pertains to the conservation of health and life. And for them the county societies could arrange to give a comprehensive course as taught the children in the public schools referred to above. All communities have the free use of the public schools for such purposes in the evenings and they should be made use of in this way. The employees of factory, department store, and other industrial concerns where large numbers of men, women and children are employed should be compelled to submit to a periodic physical examination. Such examinations should be made by men of mature judgment and men whom the county medical society would be willing to stand behind in their every act and statement. Such a plan would eliminate a great number of surgical and other conditions arising through ignorance. The results obtained would be in proportion to the amount of enlightenment acquired by the public. I am sure that goiter, enlarged glands, hernia, large tonsils and cataracts would thus reach the surgeon at an earlier date than at present.

The lay public will take to such a plan very rapidly. Note the rapidity with which those most lacking in education absorb things in and about a hospital. No matter how short a time they may be confined in such an institution they pick up every little thing they hear or see and are always eager to learn more.

So much for the schooling of the layman. Now if we devote the time and energy required to school the public to the extent contemplated herein we should not neglect the schooling of the surgeon. Surgery is based first upon a knowledge of anatomy;

second, upon a mechanical mind; third, upon good sound jdugment, and last, but not least, upon honor. And the man without the last qualification, no matter how proficient he may be in the others, is a disgrace to the profession.

I liked the ring of Jona's statement in his article "Surgical Conscience." "Medical schools should be first equipped with good instructors. Men as instructors are of more importance than palatial buildings."

The old Greek philosophers always gave thanks to their tutors who schooled them first in honor. Science is based upon the fundamental principle of honesty.

Teach one to be honest with himself; then if he be honest with himself in all things, he will be honest with his fellowmen. Every game that is played has rules governing it and when I see a man or boy attempting to fudge a little while playing any game, no matter how simple it may be, then I know his schooling has been neglected or that there is some kink in his nature. Maybe he is not to blame for it, but his father or mother was responsible.

The surgeon, of all professional men, requires prolonged training in the development of reasoning powers and mental habits which render him capable of safeguarding the lives, anatomy, and other interests of those who come into his hands.

No written instructions, no matter how exact, are sufficient to educate a surgeon. The numerous details can be learned only by constant looking on and by practicing under skillful guidance in hospitals.

Indications for operations must all be learned clinically. The surgeon should be calm and have a thorough knowledge of the work he is about to do in any given case and if he is not in that mental state he had better let some one who is do the work. More deaths are due to faulty technic than to the application of wrong principles. If we wish to achieve ideal results we must work under ideal conditions; we must observe absolute asepsis and have unusual mechanical and operative skill and not pull, maul, tear, or strangle the tissues with sutures or ligatures. A. J. Ochsner burned these principles into my mind so deeply they became indelibly fixed. "Gentleness and thoroughness should be our aim. One's knives should be unusually sharp, the entrance wound made large enough, where conditions permit, to give plenty of room to make a complete dissection, hemostasis should be accurate. This facilitates a saving of time and every moment should bring certain results, work rapidly but not against time." When the operation is of an abdominal nature, while the surgeon is doing what one seems called to do, as per the diagnosis made, he should explore the other viscera, it takes but a moment and you will not be embarrassed by taking out an appendix and three days later find that you should have cared for a volvulus and that the patient would have lived had the proper attention been given him at the proper time. A complete operation should always be aimed at when conditions permit. Useless operations should never be done, that is to say no operation should be done unless one is confident that he can obtain a certain amount of fixed results.

In the diagnosis and treatment of a surgical disease the patient who can afford it has the advantage of several experts in several specialties. The family physician once represented all of the skill, both medical and surgical. To-day the surgeon represents all of the surgical skill, but the surgeon is dependent upon other specialists having to do with surgery.

The radiographist, the gastro-enterologist, the urologist, the bacteriologist, and all of the specialists, at times perform services which the surgeon cannot perform, and such services are now a part of his armamentarium. Besides these there are the nurse, the historian, and the anesthetist—other important adjuncts. Moreover, while the dividing line between surgical and medical diseases is being more clearly defined, the dividing line between surgical and medical patients scarcely longer exists. As a near approach to perfection in the treatment of surgical diseases is attained, more and more attention is given to the whole patient, who is now regarded as a community of organs with various disorders and possibilities of disorders, all more or less intimately correlated to the surgical disease. The best results in surgical work are attained where these facts are reckoned with. There is no question about more education on the part of the laity being required. The profession has reached a point now where it must go on. It will travel on its own momentum. The trend of thought to more perfect technic and greater achievement of more perfect results is constantly being beckoned on by the silent voice of science.

It should not be forgotten that kidney stones occasionally cause only vague, more or less continuous pain in the epigastrium or elsewhere than the loin. The finding of erythrocytes in the centrifugalized urine will give the clue.

EXPERIENCES WITH HYOSCINE-MORPHINE ANALGESIA OR NARCO-ANESTHESIA.

SPENCER R. STONE, M.D.,
ATLANTA, GA.

For twelve years I have performed a goodly portion of my major operations under morphine-hyoscine analgesia—which generally acts as an anesthetic also. It is particularly applicable to those who for various reasons should not, or fear to, take chloroform or ether, also those who are unable to pay an anesthetist's fee. Neither shock nor nausea follow its use, this affording much satisfaction to both patient and surgeon. I employ the combination of hyoscine, morphine and cactoid. Morphine hydrobromide ¼ gr., hyoscine- hydrobromide 1/100 gr., cactoid 1/64 gr., is given hypodermatically in any part of the body 40 minutes before the probable time for beginning to operate. Some patients are ready for the knife in 20 to 30 minutes, others require half of the above dose repeated 40 minutes after the first injection. Susceptibility to this varies as much as in the use of chloroform or ether. Half or two-thirds of the original dose followed by a smaller dose in 30 minutes if necessary is advisable in small or depleted patients.

I have performed resections and amputations with the patient sitting up and conversing during the entire operation, sensing no pain whatever, Where delay is objectionable and analgesia is not quite complete, a few inhalations of chloroform put the patient under at once.

Some years ago I amputated a leg under this plan with no one present from beginning to end but the trusting patient. Though it was at the expense of great nerve strain we were rewarded by a painless, shockless recovery, primary union obtaining.

A mammary carcinoma, in an old lady who had been told to never take ether or chloroform again, was recently removed in the presence of surgeons and nurses who had not witnessed the use of narco-anesthesia before. All expressed themselves as favorably impressed. As to its use in obstetrical practice, the tendency to stop the pains discouraged me years ago, but it was probably due to having given too much or premature. I intend to give it a careful trial in these cases in the near future.

In a case of traumatic epilepsy exhibiting the most complete and prolonged opisthotonos unaffected by large hypodermatics of morphine of the administration of chloroform, this combination invariably relaxed the muscles in a short time and produced a restful sleep I eventually trephined the case under its use.

During a seven year service as surgeon to a county hospital it was found to be the most satisfactory hypnotic for incurables with painful afflictions. A cystitis in a paralytic from fracture of a vertebra distinctly marked its efficacy. When judiciously used this compound is practically harmless and is applicable to a much wider field than has hitherto been awarded it.

BLASTOMYCOSIS.

Blastomycosis should be ruled out in all cases of chronic pustular or ulcerative lesions of the skin, wasting pulmonary diseases in which there is a persistent absence of the tubercle bacillus in the sputum, in all superficial or deep abscesses, especially when connected with bones, suppurative arthritis and suspected Pott's disease. In the clinical study of blastomycosis it should be remembered that systemic infection usually takes place through the respiratory tract, and that the cutaneous manifestations are followed by systemic invasion with comparative rarity. It should also be remembered that the blastomycetic infections are essentially of a pyogenic character and that the pus wherever found is likely to contain the characteristic organism. In the skin, the encircling wreath of minute miliary abscesses or pustules on the periphery of the ulcers and granulomatous, fungoid, or papillomatous, areas is most characteristic. Abscesses in the subcutaneous tissues, lymphnodes, muscles, bones, nervous tissues and viscera are characteristic of this pyogenic tendency.—RUDOLPH MATAS in *New Orleans Medical and Surgical Journal.*

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, JANUARY, 1916.

SURGICAL CONSIDERATIONS OF THE ALLEN TREATMENT OF DIABETES.

No serious problem more commonly confronts the surgeon than that of diabetes—either the diabetes that is merely incidental or, more especially, the diabetes that is contributory to the affection requiring operation. And so the surgeon, scarcely less than the internist, is deeply interested in a treatment which experiences thus far stamp as the most important contribution to the therapy of diabetes in many years. This, the so-called "starvation treatment of diabetes," devised by Frederick M. Allen of the Rockefeller Institute, appears to give much better results and more lasting results, so far, at any rate as sugar tolerance is concerned, than any other routine method. The surgeon well may hope, therefore, that, directly or indirectly, the Allen method will afford a solution to the serious problems of surgery in diabetics.

With the experimental basis and clinical rationale of Allen's treatment, with the details of the treatment itself, we presume most of our readers are familiar, for this has been one of the most important medical developments of the year just past. Those who are not yet familiar with the subject should read the articles by Allen himself and by Elliott P. Joslin, of Boston, in *The American Journal of the Medical Sciences*, October, 1915, and such current articles on the subject as that by Arthur Bookman in the *New York Medical Journal*, December 18, 1915. As a precise guide in the proper conduct of the after-treatment we commend, too, the brochure by Lewis Webb Hill, M. D., and Rena S. Eckman,* which contains a series of graduated diets carefully worked out at the Massachusetts General Hospital.

It seems reasonable to believe that a diabetic who has to undergo an operation of election, e. g. a hernioplasty, will be better prepared for that operation if rendered and held sugar-free by a deliberately conducted Allen treatment. But what of the diabetic upon whom operation cannot long be postponed? If the operation be imperative, but can be held off one or two or three days, will the patient be better prepared for it if starved that few days and thereby made sugar-free? If, after operation, glycosuria persists or returns, will the surgical patient tolerate starvation and subsequent carbohydrate deprivation as well as Allen has showed that un-operated patients do? What, if any, allowance is to be made for anesthesia and operation in conducting this treatment? In urgent and in fairly urgent surgical conditions in diabetics what can be done by this plan of treatment to increase the patient's safety?

Is it desirable to apply the treatment at all or in what modified form when operation cannot long be postponed? How is it to be applied after operation, after narcosis by ether, by chloroform by nitrous oxid?

These, roughly, are the surgical aspects of a problem well-worth studying, preferably with the help of an internist already familiar with the conduct of the "starvation treatment." No doubt various surgeons are putting these questions to a solution. We have, however, seen no publication thus far on the application of Allen's method to surgical cases. We await its appearance with very great interest.—W. M. B.

DIAGNOSIS OF PANCREATITIC DISEASE.

The pancreas, the least accessible to the surgeon of the abdominal organs, is also the least familiar to him in its morbid manifestations. Indeed, disease of the pancreas is often unrecognized as such until revealed at operation. To be sure, we are sometimes able to diagnose certain foudroyant types of pancreatic disorganization, and certain chronic pancreatic affections, but most often pancreatitis with acute symptoms is mistaken for some other affection of the upper abdomen, or such disease of the bowel as obstruction or mesenteric thrombosis.

* The Starvation Treatment of Diabetes. Published by W. M. Leonard, Boston, 1915.

It seems more and more likely, as our experience has developed, that many attacks of upper abdominal pain and vomiting, attributed to ulcer of the stomach or cholecystitis are, rather, instances of pancreatitis. As Deaver has well put it, "Though the term acute pancreatitis is usually reserved for those pronounced and usually fulminating cases characterized by hemorrhage into the pancreas and surrounding tissues, with fat necrosis and servere local and systemic symptoms, it is a mistake to believe that acute pancreatitis can not occur without these severe manifestations. I am convinced that many such cases occur, and are regarded as instances of gall-bladder, gastric or duodenal disease, owing to the absence of distinguishing signs and symptoms and the reluctance of the physician to make an unaccustomed diagnosis. Such cases are encountered not so infrequently upon the operating table, where they may or may not be recognized according to the thoroughness of exploration of the surgeon and the degree of his interest in the pancreatic condition." (*Pennsylvania Medical Journal,* December, 1915.)

The study of the pancreatic (and biliary) ferments, readily secured from the bowel by means of the duodenal tube, will help a vast amount in the diagnosis of many cases; and if both surgeons and internists will encourage as a routine this study of the duodenal contents in diseases of the upper abdomen, there will be a yield of information that will go a long way, indeed, towards bringing the pancreas into the territory of diagnostic conquests. —W. M. B.

THE IMPENDING RUPTURE OF A PUS TUBE.

Accumulating experience has shown that rupture of a pyosalpinx into the free peritoneal cavity is not as rare an accident as it was once thought to be. Four years ago we found* ninety cases recorded in the literature, and have since then operated upon three in a general surgical service. Many other general surgeons have no doubt had similar experiences. That the lesion is not more familiar to the gynecologists is attributable to the fact that the diagnosis is usually not made before operation.

The signs and symptoms are those of peritonitis due to the rupture of a hollow viscus, and the appendix is most apt to be blamed. Since the indication for immediate operation is clear the previous determination of the offending organ is not of great importance. The diagnosis offers fewer difficulties, however, if the occasional rupture of a pus tube is borne in mind. In the presence of a diffuse peritonitis following an attack of severe pain, the Fallopian tube should be considered after the appendix, the gall-bladder, the bowel and the stomach. Localization of the pain and tenderness low down in the iliac region, *perhaps* the presence of an ovarian Head zone, the history of gonorrhea, of recent pregnancy or of uterine instrumentation, are all suspicious of tubal disease, which suspicions are fortified if there is great tenderness and a mass or fulness in the vaginal fornix, especially if it be on the left side, where an appendix abscess is not likely to be found. If the patient is known to have had a pyosalpinx, especially if it has been giving such evidences of activity as repeated attacks of pain, the diagnosis of ruptured pus-tube is presumptive. Finally, if a previously palpated tense tube is now felt flaccid or collapsed, the diagnosis may be made with assurance.

What is more important, however, than the differentiation between ruptured tube and ruptured appendix is the determination, in cases of pyosalpinx under observation, of *impending rupture*. This, too, can sometimes be done. It is to be noted in the histories of several of these cases that there were repeated attacks of severe pain, usually localized, over a period of several days before the final attack that marked the rupture. Just as these preliminary seizures are suggestive of a tubal rupture in a case of purulent peritonitis, so in a known case of pyosalpinx are they sufficiently significant, we believe, of impending rupture to warrant the abandonment of conservative treatment in favor of salpingectomy or vaginal drainage.—W. M. B.

* Rupture of pyosalpinx as a cause of acute diffuse purulent peritonitis, *Surgery, Gynecology and Obstetrics*, May, 1912.

Surgical Suggestions

In differentiating between appendicitis and stone in the right ureter, hematuria is not a deciding factor. It occurs not rarely in appendicitis.

Arches will not cure all the pains that feet are heir to. Yet there are few people with pain in a foot or both feet who have not had arches prescribed for them.

In seeking the cause of an inguinal adenitis do not overlook the anus and prostate.

Surgical Sociology

Ira S. Wile, M. D., Department Editor.

NATURE OR SURGEON?

While the war in Europe is killing hundred-thousands of men and myriads are being incapacitated through wounds by bayonet, saber, bullet, shell and shrapnel, there has not been a tremendous moral revulsion against this liberation of the primitive instinct of killing. Normal men of maturity are being reduced in potential power so that their full social capacity may never again be available to their respective nations. The mental incapacities that are to result from the scenes of horror, the inspired fears and the tremendous exhaustions are beyond estimation at the present time. It required, however, a small child in Chicago to create a social, economic, and ethical discussion of major importance as to the right of a mental defective to live and the prerogative of a surgeon in determining upon the course of action he should pursue with reference to a congenitally maimed child.

Is a surgeon justified in deciding to withhold an operation which might prolong the life of an infant whose future would be essentially parasitic in nature? Is the ethical content of "Thou shalt not kill" sufficient to compel operations, which in themselves might lead to death, in the hope of prolonging life even for a short period of time?

This particular incident possesses unusual significance because it aroused a wave of emotionalism and sentimentality on the one hand, and an attempt at the crystallization of scientific, social, and ethical opinion on the other hand.

Life itself is not held sacred by the State, as is evidenced by the fact that the death penalty is still exacted as punishment for crime. Society has no hesitancy in extolling the virtues of those who destroy lives in military combat for the defense of the state. Society condones wilful destruction of man through the operation of the "unwritten law" in defiance of the enactments of the written law. Herein, it is patent that those standing for law and order do not consistently regard life as sacred under circumstances requiring self-defense, the defense of the family or nation, or the protection of society from male-factors. It is true, there has been much progress since the bloody laws of Draco which indicated a constructive disregard for the individual's right to live. Among the Greeks where the service to the State was of paramount importance, the exposure of children on Mount Hymettus was not dissonant with the ideas of Spartan morality. Under the sway of Roman law the power of the father (patri potestas) over the life and death of his children was generally recognized. In the modern conception of the State's power, children are considered as wards of the State and under the protection thereof. There has been inaugurated a remarkable code of laws for the protection of infantile life, the best exemplification of which is the British Children's Charter.

Is the State justified in considering all children in the light of their possible advantage to itself through their future service? If so, is it justified in determining upon a policy that will legally permit children, mentally defective, to have their days on earth limited through acts of man? Unfortunately, in the consideration of this question, there is too frequently confusion in the minds of some between unfortunate infirmities, unesthetic to view and limiting function in a physical way, and those incapacities which actually produce social uselessness. No one would advocate death for a child congenitally blind or congenitally deaf or congenitally disfigured as long as there was assurance of inherent mental educability to a plane of social usefulness. The idiot, however, represents a different type of child whose mental powers can never be developed so as to make it capable of self-adjustment or self-protection in its environment.

There are few types of defectives whose conditions may be recognized more or less readily at birth. Many cases of mongolism, microcephalus, hydrocephalus and cephalic monsters represent infants of this order. Their life history, in event of their living beyond the age of puberty. amounts to social parasitism.

Every surgeon in the discharge of his duty is bound to bring his best judgment to bear upon the proper course of action to pursue in any specific case. His judgment may decide for or against an operation. This decision is certainly one of his prerogatives and the freedom of his mind is one of the checks upon his actions which is protective of the community. When, however, his decision contravenes tradition and his judgment and conscience dictate an action of vital importance to the patient, his family, and the community, his action should not be based merely upon his own initiative and unsupported opinion, but should have the supporting strength of the opinion of consultants. Then only should the family be given the choice as to whether an operation is to be performed or not. In the last analysis the family still has the right to decide which opinion it will adopt with regard to an impending operation. If the family for sentimental reasons chooses to preserve a life against the judgment of the attending surgeon, the latter is privileged to ask permission to be relieved from further responsibilities or connection with the case.

By some the term "murder" has been carelessly used with reference to the neglect of the Chicago surgeon to perform an operation which might or might not prolong life. The term is unfortunately and incorrectly applied. "Murder—to kill a human being with premediated malice; take the life of deliberately, maliciously, and unlawfully, or criminally." "Murder is the intentional killing of one human being by another either without moral right or without legal authority." In its legal significance it is also defined as "the killing of a human being either directly or indirectly without excuse or justification and by any means other than perjured or false evidence before the tribunal of justice."

The question of the interpretation of these definitions merely resolves itself into this: Is a sur-

geon justified in permitting nature to take its course? Is he morally and ethically justified in refusing to perform an operation which he believes will not cure the pathological condition nor indeed palliate it? It is needless to say that, daily, many decisions of this character are made throughout the country without the suspicion of malice, moral indefensibility or implied criminality. To be sure, there are many vital questions which might grow out of careful consideration of this opinion. To illustrate, would a surgeon be justified in refusing to operate, for a gangrenous appendicitis, upon a feeble-minded adult, living in an institution supported by the state? This, however, is but one of many types of decisions about which there might be considerable difference of opinion at the present state of thought.

The importance of the Chicago case is enhanced by some of the dangers inherent, even in collective judgment as to the probable mentality of children. Feeble-mindedness is rarely noticeable until after the first few years of life. The dangerous, moral defectives are certainly not recognized until well along in childhood. The physical stigmata of children are not to be relied upon as necessarily indicating a tendency to mental degeneration. Even head measurements are not constantly reliable. It is undoubtedly true that the presence or absence of deformities of the ears, palate, eyelids, etc., tend to be more common and more extensive in the worst types of mental defectives, but this may be said to be only a tendency.

Fortunately, mental defectives die at earlier ages than normal children and have diminished resistance to disease. Dr. Shuttleworth found the mortality of mental defectives to be nine times as great as that of normal children.

With the rapid breeding qualities of defectives, if our eugenically-minded colleagues are correct, we should by this time be overwhelmingly inferior mentally and physically. As a matter of fact, however, it is probable that the high mortality rate during infancy, particularly during the first week and the first month, takes its greatest toll from among those infants whose social usefulness would be limited because of genetous defects. The recognition of this tremendous infantile mortality is desirable in order to intelligently judge whether letting nature take its course in the interests of the child, the family, and the state, is morally justified. Would surgery tend to decrease in any way the infant mortality among weakened and mentally limited infants? While presenting these figures, it must not be forgotten that the most difficult problem is recognized in the difficulties and limitations of determining mental infirmities at birth.

During 1911, there died 149,322 children under one year of age within the registration area. Of this number some of the causes of death were syphilis 1,787, convulsions 3,643, malformations 7,879, premature birth 23,539, congenital debility 18,580 and injuries at birth 4,573. These six causes alone were responsible for more than one-third of the total mortality of the first year. It is not improbable that this figure includes a considerable number of the infants whose physical appearance might suggest mental incapacity and for whom the question of operation would have to be considered.

During the first week, however, one quarter of the total annual deaths occurred from: syphilis 256, convulsions 1,076, malformations 4,586, premature births 18,606, congenital debility 6,531, injuries at birth 4,161, the total from these six causes being 39,216. These figures change within the first month so that approximately one-third of the total first year mortality and almost five-sixth of the total mortality from these six conditions are noted within the first month of birth: syphilis 696, convulsions 1,928, malformations 6,171, premature births 22,477, congenital debility 10,368, injuries at birth 4,530, making a total of 46,170.

In the light of the well recognized tremendous, preventable, infant mortality rate, in the light of the inadequate obstetrical and nursing care, and in the face of nature taking its course in thousands of instances, where mere hygiene, education, or living wages could prevent it, as there not been too great a storm of emotionalism over the death of the unfortunate and fortunate, mental weakling and physically deformed infant of Chicago? The main question is not so much, should this particular child have been permitted to die without an operation that could not have cured it, but is there any social or moral reason justifying society in permitting mentally normal children to die from preventable causes at which society feels no moral revulsion?

Book Reviews

Manual of Surgery. By Alexis Thomson, F.R.C.S. Ed., Professor of Surgery, University of Edinburgh; Surgeon, Edinburgh Royal Infirmary and Alexander Miles, F.R.C.S., Ed., Surgeon Edinburgh Infirmary. *Fifth Edition, Revised and Enlarged.* In two volumes. *Volume One.* Octavo; 801 pages; 289 illustrations—General Surgery. *Volume Two.* Octavo; 948 pages; 301 illustrations—Regional Surgery. Edinburgh, Glasgow, and London: Henry Frowde and Hodder and Stroughton, 1915.

The new revision of these two volumes attempts to present a practical and timely text of surgery. A third volume will deal with operative surgery, exclusively, and the present volumes, therefore, are free from all descriptions of operative procedures.

Volume I.—General Surgery. The authors briefly describe the process of repair and the conditions which interfere with repair. Inflammation and suppuration are discussed from a surgical standpoint, and tersely. The chapters on surgical bacteriology are very brief, but written with care and accuracy. The chronic infections, then the acute infections, and finally neoplasms are dealt with. In the discussion of shock, to instance one chapter where the content is brought up to date, we have mention of Gray and Parson's theory of abnormal afferent impulses, the theory of vasomotor exhaustion, advanced by Crile and Mummery, Malcolm's theory of the contraction of the arterioles, finally Yandell Henderson's explanation of the diminution of the carbon dioxide content of the blood. The chapters on dislocations and fractures offer nothing new, but are rather well illustrated and afford a concise manual of these surgical conditions.

Volume II.—Regional Surgery. Each region discussed is prefaced by a simple yet adequate presentation of its surgical anatomy. Obviously, one moderate sized volume

cannot present comprehensively so vast a subject matter as regional surgery. For this reason some chapters are quite meager in subject matter, for instance the chapter on the thyroid gland, where the classification of thyroid diseases is not well given, or the chapter on the ear, in which the ear conditions are practically just enumerated. The text, however, on concussion and compression of the brain, of the various forms of hernia, of stomach, intestinal and gal-bladder surgery, as well as the genito-urinary surgery are properly detailed.

Emergency Surgery. JOHN W. SLUSS, A.M., M.D., Associate Professor of Surgery, Indiana University School of Medicine; Ex-superintendent, Indianapolis City Hospital; Surgeon to the City Hospital. *Third Edition, Revised and Enlarged.* Duodecimo; 828 pages; 685 illustrations, some colored. Philadelphia: P. BLAKISTON'S SONS & Co., 1915. Price, $4.00, net.

This book aims to be a concise volume for the general practitioner in the surgical phase of his daily routine. The conditions, therefore, are considered chiefly from a practical and emergency point of view. The book endeavors to do what Lejar's larger work did, but in a more condensed and brief way; in fact Lejar's is not infrequently quoted in Sluss' text and a number of Lejar's illustrations are used. In the light of the increasing knowledge of military surgery, Sluss lays some emphasis upon the chapter dealing with this branch of surgery. The book abounds in numerous small practical and valuable suggestions; for instance, in the removal of small tumors, in skin grafting, in finger amputations, in tendon sheath phlegmons. The illustrations are clear and satisfactory.

Handbuch der Kinderheilkunde, for the Practitioner. Edited by PROFESSOR DR. M. PFAUNDLER and PROFESSOR DR. A. SCHLOSSMANN. Volume five—The Surgery and Orthopedics of Childhood. Large octavo; 418 pages; 25 colored plates and 258 illustrations. Leipzig: F. C. W. VOGEL, 1915. Price, 20 marks (unbound).

Except for two comparatively small portions, dealing with orthopedic conditions of the child, and written by Fritz Lange of Munich, this volume was written by Hans Spitze of Vienna.

Part I. deals with congenital diseases. This text is profusely and beautifully illustrated. Each condition is discussed etiologically, pathologically, the symptoms and signs clearly presented, and the various forms of treatment indicated. The parts here, dealing with the lip and palate defects and the genito-urinary defects, deserve particular mention. The discussion of congenital hernia is very good, and the accompanying illustrations and diagrams leave little to be desired.

Part II. treats of the surgical disturbances mainly skeletal in nature, which appear after birth.

Part III. takes up surgical infections, acute or pyemic and chronic or tubercular.

Part IV., Part V., Part VI. deal respectively with traumata, neurological conditions, and tumors.

Throughout the book there are numerous illustrations and finely executed colored plates. The text is clearly and well printed.

Books Received

Potter's Compend of Human Anatomy. Revised by D. GREGG METHENY, M.D., L.R.C.P. and S. (Edin.), L.F.P.S. (Glasgow); Associate in Anatomy, Jefferson Medical College, Philadelphia. *Eighth edition.* Duodecimo; 428 pages; 139 illustrations. Philadelphia: P. BLAKISTON'S SON & Co., 1915.

An Introduction to Bacteriology for Nurses. By HARRY W. CAREY, A.B., M.D., Former Assistant Bacteriologist, Bender Hygienic Laboratory, Albany, etc. Duodecimo; 151 pages; illustrated. Philadelphia: F. A. DAVIS COMPANY, 1915; Price, $1.00, net.

The Obstetrical Quiz for Nurses: A monograph on Obstetrics for the Graduate and the Under-Graduate Nurse in the Lying-in-room. By HILDA ELIZABETH CARLSON. Duodecimo; 322 pages. New York: REBMAN COMPANY, 1915.

Theory and Practice of Bloodletting. By HEINRICH STERN, M.D., LL.D., Visiting Physician St. Mark's Hospital, Consulting Physician Methodist Episcopal Hospital, Founder and Editor of the *Archives of Diagnosis,* etc. Duodecimo; 371 pages; 23 illustrations. New York: REBMAN COMPANY, 1915.

Hospitals and the Law. By EDWIN VALENTINE MITCHELL, LL.B., of the Faculty of the College of Law of the University of South Dakota. Duodecimo; 191 pages. New York: REBMAN COMPANY, 1915.

Laboratory Methods, With Special Reference to the Needs of the General Practitioner. By B. G. R. WILLIAMS, M. D., Member of Illinois Medical Society, American Medical Association, etc. and E. G. C. WILLIAMS, M. D., formerly Pathologist of Northern Michigan Hospital for the Insane. *Third Edition.* Octavo; 214 pages; 43 illustrations. St. Louis: C. V. MOSBY COMPANY, 1915, $2.50.

Diseases of the Skin. By HENRY H. HAZEN, M. D., Professor of Dermatology in the Medical Department of Georgetown University, Professor of Dermatology in the Medical Department of Howard University; Sometime Assistant in Dermato ogy in the Johns Hopkins University, etc. Octavo; 539 pages; 233 illustrations. St. Louis: C. V. MOSBY COMPANY, 1915.

"Speaking of Operations." By IRVIN S. COBB. Duodecimo; 64 pages; illustrated. New York: GEORGE H. DORAN COMPANY, 1915. 50 cents.

Progress in Surgery

A Résumé of Recent Literature.

Chronic Retention of Urine in Children. EDWIN BEER, NEW YORK. *Journal of the American Medical Association,* November 13, 1915.

A number of cases of urinary retention in children are reported by Beer. Invariably the condition had in all cases been unrecognized before and the children were steadily deteriorating in health. The following is Beer's description of the condition as seen by him: "The picture presented by these cases is very suggestive of chronic interstitial nephritis. The patients become pale and pasty. Frequently they are apathetic. Usually there is some difficulty in urination. The little patients complain of pain, or their parents note that they take a long time to complete the act. In some cases the straining is so great that the patient shows collapse symptoms with excessive pallor and weakness. On physical examination a globular mass is felt in the hypogastrium; it varies in size, but never disappears spontaneously. If infection is present, the mass may be tender. When a catheter is passed, this tumor vanishes. There is regularly residual urine. The walls of the bladder are hypertrophied, though this may not be evident late in the disease when excessive dilatation takes place. On palpation one may feel the bladder contract and become hard, behaving like the pregnant uterus. If no infection has set in, the urine may be clear, suggesting the urine in chronic interstitial nephritis. Eventually all the patients seem to become infected. As a secondary and constant development, the ureter openings become patulous and the ureters dilated. Unilateral or bilateral hydronephroses develop, and the enlarged kidneys partake of the trouble, and infected hydronephrosis with or without multiple abscesses develops." Neurologic examination sometimes shows nothing abnormal, but in other cases distinct evidence of cord or brain lesion is found, the symptoms being much the same in both. Strictures in the prepuce or urethra sometimes

exist and should be regularly looked for. The etiologic factors are tabulated: first, mechanical obstructions, extravesical or intravesical, and, second, neuromuscular, such as brain or spinal cord disease and spasmodic sphincter. The cases due to extravesical obstructions are well known and two are reported. The neuromuscular group of cases with definitely discovered lesions such as Little's disease, myelitis, etc., are also represented in Beer's reported cases, and brief abstracts of cases reported by other authors are inserted. The question of a unilateral renal involvement is also considered and one case in which it is suspected but not definitely proven is quoted from Bachrach. The treatment of the cases due to mechanical obstruction, intrinsic and extrinsic, is most hopeful. If the strictures cannot be reached through the bladder or through the perineum, which is rarely the case, a temporizing cystostomy will be in place. Therapy is pretty well baffled, however, in the second group. Medicinal treatment with iodids and possibly mercury and antispasmoics will have to be tried, together with dilatation of the sphincter, and, if all attempts fail, cystostomy, perineal or suprapubic, with section of the bladder neck will be indicated. To save the progressive changes in the kidneys and ureters, if a kidney becomes infected, nephrotomy rather than nephrectomy is indicated when feasible in view of the symmetrical development of the disease.

Raynaud's Disease. Report of a Case of Symmetrical Gangrene of Unusual Severity. A. L. HOYNE, CHICAGO. *Journal of the American Medical Association,* November 13, 1915.

Hoyne prefers a stricter conception of the condition than is sometimes held. This would exclude the local syncopes of "dead fingers" and also the local asphyxia in which the parts become cyanotic and include only the symmetrical gangrenes, or the third stage of Raynaud. With this conception of the disease it is much rarer than is sometimes held in the literature. In looking over the clinical records of Cook County Hospital, which treats about 30,000 patients annually, as far back as they are available, he has found but three cases with a diagnosis of Raynaud's disease. This shows how rare the condition really must be. All three of the cases were adult males. All were associated with pain and in two of them swollen joints were a symptom. In the third case clinically diagnosed, the patient was in the hospital only forty minutes and refused a physical examination. Very little is known of the etiology. Heredity and nationality seem to play a part; of the cases reviewed by Hoyne 50 per cent. were Russians and the patient in the case he reports was of Polish birth. The disease may occur at any age, and according to his own findings, it is seen about equally in both sexes, or the males slightly predominate. Of the symptoms, pain and absence of fever at the onset are characteristics. Tips of fingers and toes are most commonly affected, more rarely the ears and tip of nose. Contrary to most authors' assertions, the lower extremities were involved in the majority. Hyperesthesia to touch is common and in the first stage or local syncope there is no pitting on pressure. Loss of sensation in the part affected usually follows gangrene. A line of demarcation is usually well developed early and the part involved assumes a black leather-like appearance. The pathology is still somewhat obscure. Raynaud credited the condition to central nervous derangement involving the arterioles. Weiss, however, considers it more due to the veins. Lustgarten seems to credit a luetic origin. That the central nervous system is partly at fault seems evident. A long list of conditions to be differentiated, ranging from frostbites to leprosy and angioneurotic edema, are given, but Hoyne thinks all of them can be easily excluded. The disease usually exists for a number of years. Acute fatal cases are rare. For the treatment almost everything has been tried and symptomatic treatment is all that can be advised. The parts should be kept warm and dry and when gangrene develops the case must be considered from a surgical point of view. The patient in the case reported was a boy 5 years old and the case was followed up to necropsy. There were acute symmetrical dry gangrene of all the extremities and the cheeks, a probably secondary thrombosis of the right femoral vein, general lymphadenoid hyperplasia, infiltration of the liver and kidney degeneration and a bilateral confluent pneumonia, which was the apparent immediate cause of death. The histologic examination gave no definite findings. A bacteriologic examination by Dr. George Mather isolated a green streptococcus and a hemolytic streptococcus which caused a malignant endocarditis in rabbits.

Late Results of Excision of the Transverse Process of the Fifth Lumbar Vertebra. F. J. FASSETT, SEATTLE. *Journal of the American Medical Association,* Nov. 20, 1915.

Three cases of neuralgic trouble due to anomalies or injuries of the fifth lumbar vertebra and relieved by operation of excision of the transverse process are reported by Fassett. Other remedies had failed and the operation was done as a last resort. The danger in the operation seems to lie in injury to the great nerve trunks, and the anterior tibial nerve fibers appear to be especially exposed. In one of the cases relief followed removal of the process on the same side as the pain and in another on the opposite side, which speaks against simple pressure being the cause. Fassett thinks the theory that the process furnishes a point about which an extreme leverage is brought into play quite plausible. Four methods of approach to the joint have been suggested: the simple incision through the erector spinae muscles, the osteopathic reflection of a portion of the crest of the ilium, the ventral route, and the muscle-flap method used in these cases. The cases show that the processes can be removed without serious damage by the first method and the last.

The Significance of the Fixation of Certain Abdominal Organs in the Human Body. R. C. COFFEY, PORTLAND. *Journal of the American Medical Association,* November 20, 1915.

The differences in the visceral arrangements between man and animal as regards the proper location and fixture of the viscera and the consequences when this is not normal in man are described by Coffey. In man the capsule of the liver is fused with the diaphragm, while in the quadruped it is suspended by a mesentery like other organs. In man the duodenum is firmly fixed to the right abdominal wall, while in the quadruped it is freely movable. In man the great omentum goes down over the transverse colon and adheres to it and the omental bursa is usually obliterated by adhesion of its layers together. Neither of these occur in the quadruped. The pancreas in man has been rotated behind the peritoneum and fixed to the abdominal wall, while in quadrupeds it lies between the layers of the mesentery. The methods in which these adhesions take place normally during fetal life are described, but unfortunately they do not always take place in the human species. It is rare that the duodenum and pancreas fail to adhere, and the omental bursa only occasionally fails to completely obliterate, but all these changes and others produce uncomfortable symptoms of visceral ptoses and displacements, such as floating kidney, etc. The remedies for these defects are discussed. In cases of defective fusion on both sides resulting in ptosis with the characteristic body formation, surgery is usually not indicated, and forced feeding, Coffey says, by increasing the abdominal pressure, will produce the best results. Occasionally, in severe cases the fixation of the ascending and descending colon and the two kidneys are needed for permanent relief. The hammock operation, which is briefly described, is rarely necessary, but a right-sided ptosis alone calls for more frequent surgical interference, which consists, first, in making a posterior incision as in nephrectomy, opening the peritoneum, removing the appendix and suturing the colon to the parietal peritoneum, and afterward fixing the kidney to the quadratus lumborum. In some cases of severe intestinal stasis, when the hepatic flexure may or may not be removable, the patient may be relieved by suturing the cecum and ascending colon into its normal position and continuing the line of suture at right angles forward across the lateral wall to the front abdominal wall, and in order to keep the transverse colon from dragging on the angle, suturing the omentum to the parietal

peritoneum from the mid-line over to meet the line of suture coming from the newly made hepatic flexure. This, the most frequent operation indicated in dealing with all defects of peritoneal fusion, is described in detail. Occasionally a severe case of constipation is due to the lack of obliteration of the omental bursa and which cannot be cured by other means is entirely cured after suturing the omentum to the abdominal wall, obliterating the bursa and holding up the middle of the transverse colon, thus preventing the dragging of a loaded transverse colon on the flexures.

Anteversion of the Neck of the Femur in Connection with Congenital Dislocation of the Hip. R. A. HIBBS. *Journal of the American Medical Association,* November 20, 1915.

Hibbs says the frequency of anteversion of the hipjoint has not been appreciated, nor has its influence on the final result in the treatment of the congenital dislocation of the hip. The effects of the acetabulum have been more considered and without doubt it is at fault in some degree, perhaps in all cases, and in some so much so as to prevent cure, but the anteversion, he thinks, is more often the cause of failure to secure ideal results. More than from 10 to 15 degrees of anteversion are abnormal. The head of the femur cannot be completely in the socket, and weight bearing and walking are affected. The question why the deformity takes place is important. It seems probable that it is due to a twist in the shaft of the femur, and it would seem logical to treat it as such and correct it by osteotomy before attempting reduction. This was done in twenty-nine hips in twenty-six patients at the Orthopedic Hospital, all the earlier patients having been previously treated for dislocation once, and in some cases twice. After the bone is divided, the lower fragment is twisted outward to the degree that the head is abnormally anteverted. After the bone unites the patient is allowed to walk in from eight to ten weeks until the external rotation of the leg is corrected by exercises and it takes the normal position in walking, the patella and toe pointing forward. At this point in the treatment the dislocation should be reduced. The lower third of the bone is selected for the operation, first, because here it does not interfere with muscle attachment, and second, because both fragments are long enough to give perfect control.

A Plea for Cholecystectomy. JOHN W. LANE, BOSTON. *Journal of the American Medical Association,* November 20, 1915.

Lane pleads for cholecystectomy as the ideal operation in gallbladder disease. The function of this organ is not yet fully known, but it is not an essential to life. Mayo has suggested that it is a useless organ left over from a stage of human embryology. There are certain conditions, however, in which cholecystectomy is strongly contraindicated, such as acute and chronic pancreatitis of an advanced type and where there is an unsurmountable obstruction of the common duct. The claim that cholecystotomy is safer is denied by Lane from his experience. He has never yet been able to find a trocar that did not leak around its puncture site, and it is not possible to do a cholecystotomy without soiling the field to a greater or less extent. The statement that cholecystotomy is rarely followed by true reformation of gallstones is probably true, but recurrence of symptoms is not rare. The objection to cholecystectomy that conditions may arise when the need of drainage is urgent but impossible on account of the removal of the gallbladder is considered negligible by Lane. The advantages of cholecystectomy are primarily that it removes from the body the natural habitat of gallstones, the quickness of convalescence, the freedom from the need of drainage and the quick healing, lessening the stay of the patient in the hospital. The higher mortality of cholecystectomy claimed by some is due not to the operation but to its delay, as is also the mortality from appendicitis, and the public should be educated in regard to this as it has been in regard to the last named disease. Lane has performed seventy-seven cholecystectomies, with but two deaths, one of these due to bad judgment and not to the operation, and the other to the lack of proper previous medical examination. In two of his cases and in addition to the cholecystectomy, both an appendectomy and a gastro-enterostomy were performed at the same time.

The Citrate Method of Blood Transfusion in Children. R. LEWISOHN, NEW YORK. *American Journal of Medical Sciences,* December, 1915.

Lewisohn recommends his method of transfusion as particularly applicable in children, in whom the older anastomotic methods are notoriously difficult. The technique is the same as that for adults. The donor's vein can be punctured proximally or distally, the direction to be chosen according to the individual case, whichever way the blood runs with the greatest facility into the glass receptacle. The blood is mixed in the glass jar with a 2 per cent. sterile solution of sodium citrate at the ratio of 1 to 10 (*i. e.,* 10 parts of solution to 100 c.c. of blood). For the reintroduction of the blood a very fine needle or cannula can be chosen. Thus one can inject the blood even in small children through a superficial arm vein of the finest caliber. This obviates any extensive dissection. By using so fine a needle one assures the slow injection of the blood and prevents the danger of sudden overloading of the circulatory system. The salvarsan flask is attached to a stand and the blood allowed to run into the vein drop by drop (in 1 case the injection of 350 c.c. thus took nearly an hour, and the three-year-old child stood this rather large quantity of blood very well, just on account of the slow injection). Lewisohn reports seven cases of transfusion in children, all of whom received profound benefit; in some the transfusion appeared life-saving.

Some New Surgical Experiences. (*Einige Neuere Chirurgische Erfahrungen*). EMIL ENGEL, Döbritz. *Deutsche Medizinische Wochenschrift,* November 4, 1915.

It has been customary to economize in the use of bandages, and now it appears that this economy, even stinting, brings with it a great deal of good, inasmuch as, generally speaking, the less bandage, and the less frequently applied, the better the result. Even pus wounds are best left alone for several days in succession; healing appears to take place better and sooner when the bandages are literally saturated with pus. A rise in temperature indicates the immediate need for fresh dressing. Many wounds will heal when approximated with plaster strips only. Suturing a purulent wound will, not infrequently result in much union of the edges. Wound fistulae heal best when promptly laid open and thoroughly curetted. Stiffness of the elbow joint may readily be overcome by simply inducing the patient to carry a pail of water every day, more and more water being added to the pail gradually.

The management of surgical wounds in the field hospital shows that best results follow conservative treatment.

The Treatment of Septic Wounds in War by Magnesium Sulphate Solution. A. E. MORISON, Sunderland, and W. J. TULLOCH, Newcastle-on-Tyne. *The British Journal of Surgery,* October, 1915.

These authors had become so impressed with the use of saturated magnesium sulphate solution as a dressing application for accident wounds from shipyards and coalmines treated in civil hospitals, that they decided to apply the same treatment in the French and English war hospitals. 40 ounces of magnesium sulphate are dissolved in 10 ounces of glycerine and 30 ounces boiling water, and sterilized in the autoclave. For recent injuries, the wound is laid wide open, the wound surface swabbed with pure phenol and lightly packed with 5 per cent. carbolic gauze. The wound is then irrigated with magnesium sulphate solution, and loosely packed with gauze, soaked in the same solution. In wounds of later date, with sepsis established, the pure carbolic-acid is omitted, and the magnesium treatment started at once. Dressings need never be changed oftener than every twelve hours. The effect on the wound is striking.